A SURVEY AND ANALYSIS OF THE USERS' EVALUATION OF CONTRACT ADMINISTRATION SERVICES

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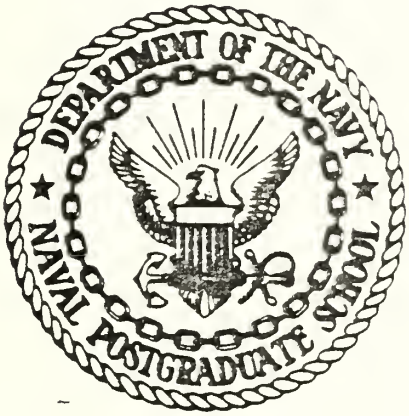

THESIS

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by

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June 1976

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Some recommendations for further research and study are also provided.

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I. PROBLEM AND SCOPE

The Armed Services Procurement Regulations (ASPR 1-201.4) define contracts to "...mean all types of agreements and orders for the procurement of supplies or services." According to Webster, a contract is "an agreement, especially one legally enforceable, between two or more persons to do or forbear something..." It is a bilateral agreement and when written, sets forth the rights and obligations of the parties involved. It contains a multitude of promises agreed to by both parties invclving the prcducts or services to be delivered under the contract, the pericd of performance or delivery dates for the prcducts or services, the price to be paid for the prcducts or services, the penalties for failure of either party to abide by its prcmises and other related conditions.

In the commercial marketplace, a certain degree of flexibility and business freedom are practiced in the everyday course of business transactions. However, this flexibility and freedom are not desirable in the Government/Defense industry marketplace where the transactions involve the expenditure of sizeable amounts of public funds. Contract administration, as the Commission on Government Procurement states, "...involves the actions necessary to insure compliance with the terms and conditions of the contract." Contract administration for the Department of Defense has evolved to insure that the contractual rights of the Government (and, in turn, the public) are protected.

Government procurement is big business. In fiscal year 1972, it involved almost 16 million separate transactions and $57 billion. The Department of Defense was responsible for a major portion of these transactions. In fact, in fiscal year 1972, DOD's purchases from industry in America exceeded $38 billion with over 10 million transactions. In 1968, at the height of the Vietnam conflict, employment in defense-related industries was approximately 3.5 million people. With the 3.5 million military personnel on active duty and the 1.3 million people employed in the Department of Defense as civil service personnel, a total of 8.3 million people were involved in defense-related business. This represented about 10% of the nation's work force.

The responsibility of managing and administering the big business of Defense procurement initially rests with the procuring agency. Within this organization, decisions affecting individual procurements are accomplished by the Procuring Contracting Officer with advice and guidance provided by the program manager and the technical staffs. The Armed Services Procurement Regulations (ASPR) 1-406 (see Appendix A) provides for the delegation of certain contract administration responsibilities. For the Department of Defense, two major contract administration organizations are available. These are the Defense Contract Administration Services (DCAS) managed by the Defense Supply Agency (DSA), and the individual service organizations which include the Army Plant Activities, Navy Plant Representative Offices (NAVPROs) and Air Force Plant Representative Offices (AFPROs.) The DCAS organization functions primarily on a geographic basis with a region/district method of operation. It does have a number of individual defense industry plant assignments which is the primary method of operation for the service contract administration activities. In March 1972, DCAS components were assigned to 34 DOD industry plants while the services had responsibility for 39 (Army: 5; Navy:

15; Air Force: 19.) Even though the authority of these various contract administration activities is derived from the same source, namely ASPR, individual policy and procedural differences have arisen from parent organization interpretation and implementation of the ASPR provisions.

In carrying out their responsibilities, the contract administration components can do much to assist in the effective and efficient meeting of the defense industry's and Government's contractual obligations. On the other hand, the contract administration component can burden both the Government buying office and defense contractor with unnecessary restrictions and unproductive requirements. A sound procurement, from the standpoint of valid requirements determinations, realistic specifications and delivery requirements, rational source selection and reasonable terms and conditions, can be easily turned into a contractual and financial nightmare by the mis-application of contract administration procedures and requirements.

Contract administration is an integral part of the defense procurement system, a part whose importance is often under-stated. Its importance and place in defense procurement must be understood and appreciated.

On 21 July 1975, the Office of the Assistant Secretary of Defense (OASD), (Installations and Logistics) announced a major study of the contract administration function in the Department of Defense. The study was to encompass not only the Defense Contract Administration Services (DCAS), but also include the Army, Navy and Air Force contract administration organizations. The major purpose of the study was to develop improved policies which would optimize manpower resources to accomplish essential contract administration tasks. Overall direction of the effort was assigned to an OASD Study Coordinator with the authority to

draw resources and data from the three services and the Defense Supply Agency.

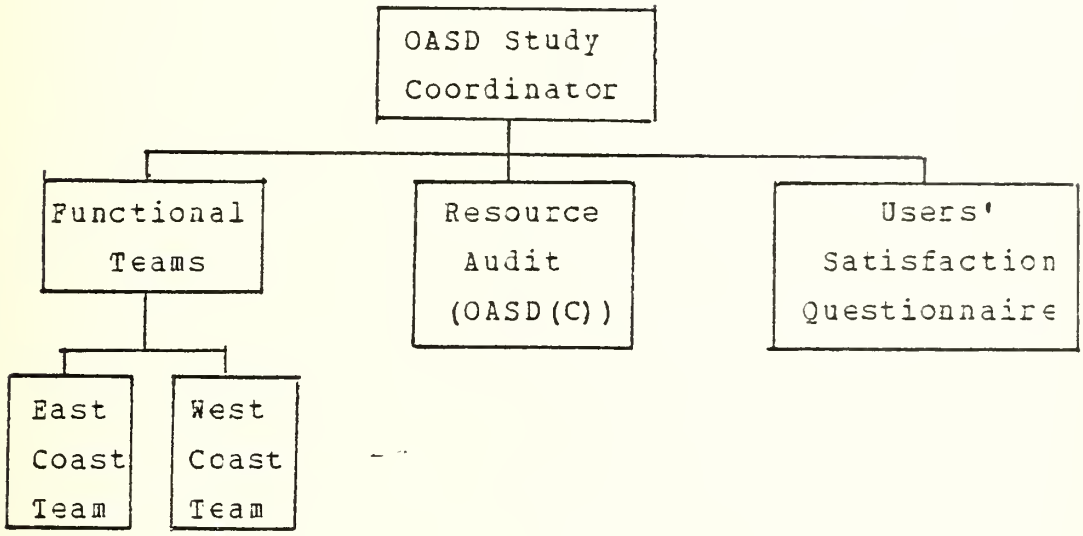
The accomplishment of this study was to require three phases. The first phase involved the formation of joint Army, Navy, Air Force and DCAS functional teams. These teams were composed of individuals, both military and civilian, with expertise in the various aspects of defense procurement, such as cost analysis, engineering, administration, quality assurance, etc. The teams visited appropriate component Headquarters Commands to ascertain and review the existence of policy and guidance at the headquarters' level. The teams then separated into East and West coast groups and went into selected contract administration activities to evaluate the implementation of the headquarters' policies at the working level. At the same time, the attitudes of working level personnel were sampled along with any suggestions for improvements or policy deletion. Innovative approaches to contract administration problems were also sought.

The second phase of the study involved a resource utilization audit to be accomplished by the OASD (Comptroller.) This phase examined the utilization of manpower and resources to determine whether the optimum amount of resources were being applied to accomplish essential contract administration tasks.

Phase three of the study involved the development of a questionnaire to be administered at selected DOD buying activities to survey the attitudes and opinions of their personnel toward the services provided to them by the contract administration components (DCAS, Army Plant Activity, Naval Plant Representative Office (NAVPRO), and Air Force Plant Representative Office (AFPRO).) The purpose of the questionnaire was "...to determine overall DOD buying

offices' satisfaction with the services obtained in the user-customer relationship."

The following chart outlines the organization of the overall OASD study effort.



The purpose of this paper is to examine, in detail, this third phase of the OASD study on contract administration, the buying office/requiring activity satisfaction with contract administration services. Subsequent chapters will detail the rationale and methodology of the study, the characteristics of the participants of the study, the correlation of the study participants to the DOD procurement workforce, and a general analysis of the survey results. Finally, some recommendations for further studies based upon the survey results will be presented.

II. METHOD OF STUDY

A. Reasons for Selecting Questionnaire Method

There were two basic approaches for accomplishing the purpose of the third part of the OASD study. The first approach would have involved the selection of a few major DOD buying activities and then the performance of an extensive interview of those activities' attitudes toward contract administration services (CAS.) The second approach was the development of an inclusive, but generalized questionnaire that could be administered at a greater number of activities.

The first approach would have permitted an in-depth analysis of the individuals within those activities and their attitudes with follow-up interviews on specific items and areas uncovered during the initial questioning and sampling. However, it was decided that such an approach would permit the introduction of a sampling bias in favor of the few very large buying activities. It may have uncovered significant problem areas, but would have given undue attention to areas characteristic of the few large buying organizations which were chosen. Generalization of any findings to overall DOD buying activities would have been extremely difficult.

The second approach, that of a questionnaire to sample a larger number of activities and individuals within those activities, was chosen. While this approach would not permit, in the time available, detailed examination of any

significant problem areas uncovered, it would provide for a broader response band of general attitudes and opinions that could more rationally be applied to all DOD buying components. It was further felt that such an approach would highlight fundamental, recurring type problems that could be characterized as DOD-wide or service-intensive. Such an approach, using anonymous questionnaires, might also provide a vehicle for receiving suggestions from the respondents as to improvements in the contract administration system.

It is recognized that the questionnaire form of data collection has limitations. In attitude surveys, it is very difficult to determine the frame of reference of the respondent. His responses to the questions can be derived from erroneous experience sets. Individual interpretation of questions and wording can vary greatly. Gradation of responses are difficult to measure. However, the questionnaire method is quick, relatively inexpensive and usually produces a bountiful amount of data. The impact of individual differences would be minimized by aggregation. This second approach would also provide a significant data base for future research in this area of study, and permit concentration and in-depth analysis of specific problems areas. For these reasons, the questionnaire method was selected.

B. Design of the Questionnaire

The questionnaire was designed to obtain three types of information and data. In PART 1, personal information about the respondent and his background and experience with contract administration services was solicited. This information would be useful in classifying the respondent and in the identification of any significant trends among the various categories of respondents, grouped either by

service, age, schooling, product line, etc. PART 2 solicited the respondents' evaluation of the various contract administration functions performed by field contract administration services (CAS) activities. It specifically requested their evaluations of the Defense Contract Administration Services performance, of the service contract administration activities performance, and finally asked whether that particular function could better be performed by the buying/requiring office. The third type of information desired was suggestions and comments from the respondents. Space was provided on each page of PART 2 for this, and one paragraph of the PART 2 instruction sheet invited the participant to provide this type of information. Appendix B contains a sample of the entire questionnaire package.

PART 2 of the questionnaire was developed using the ASPR 1-406 (Appendix A) listing of contract administration functions as a base-line. The functions were, in some cases, combined, redescribed or omitted. Fifty-four functions were finally identified and sub-divided into four major functional areas: General Contract Administration, Production, Quality Assurance and Engineering. In addition, six general questions were added to each of the four major categories. These questions concerned the (1) providing of advice to the buying office, (2) responsiveness of the CAS component (3) working relationship of the CAS component with the contractor(s), (4) manning of the CAS component, (5) technical expertise of the CAS component and (6) general overall performance of the CAS component.

The questionnaire was designed to require approximately 30 minutes to completely answer all the questions on each page. It was expected that only certain respondents with extensive experience in contract administration would be able to answer all questions. Space for "No Comment" was

provided for all evaluative questions. In addition, a block was provided at the top of each page of the evaluative portion which enabled a respondent to indicate that he did not have sufficient experience in that particular category to answer any of the questions . In this manner, after quickly reviewing the category of functions, the respondent could by checking this one block complete the page. In cases where this was done, the average time for completion of the questionnaire was reduced to between approximately fifteen and twenty minutes.

For the evaluation of the DCAS and service contract administration activities in PART 2, one other design feature should be mentioned. The number of response categories available to each respondent was four (the "No Comment" column has previously been discussed.) Two of these response categories could be considered as favorable responses ("Excellent," "Satisfactory"), and two could be considered unfavorable ("Needs Improvement," "Unsatisfactory"). The use of four categories was thought desirable since it would force the respondent to indicate a favorable or unfavorable attitiude. A middle-of-the-road or average response was thereby discouraged.

The formating of the the questionnaire was as follows:

1. Covering Memorandum under the letter-head of the Office of the Assistant Secretary of Defense.

2. PART 1 - Demographic Data Sheet.

3. Instruction Sheet for PART 2.

4. PART 2 - Function Evaluation Sheets (4).

C. Preparation and Pretest of the Questionnaire

The development of the questionnaire commenced in September, 1975. In the next two and a half months, numerous revisions to the format and questions were made. Input from the OASD Study Coordinator, along with the opinions and suggestions of the functional team members were solicited. Many of their recommendations were included in the pretest version of the questionnaire. Since the questionnaire would ultimately be distributed to all the services, a tri-service pretest sample was chosen. The following activities were used to pretest the questionnaire:

ARMY - Sacramento Army Depot, Sacramento, CA
NAVY - Naval Weapons Center, China Lake, CA
AF - Space and-Missile Systems Office, Los Angeles, CA

The pretest took place at these activities in late November 1975.

Twenty questionnaires were administered at each of the above mentioned activities. Fifty percent of the questionnaires were distributed to procurement personnel. These personnel were categorized as procuring contracting officers (PCO's), buyers, negotiators, cost analysts and contract specialists. The balance of the questionnaires went to non-procurement personnel. These were the engineers, technicians, logisticians, quality assurance and production specialists. While, in most large buying activities, there is a great disparity in the numbers of people assigned to procurement functions (as categorized above) versus non-procurement functions, it was felt that the even split in the distribution of the questionnaire was justified since the procurement personnel interfaced more intimately and more frequently with the contract administration components. The even distribution system was

ultimately followed in the administration of the final questionnaire.

Since the questionnaire was to be self-explanatory, at each of the pretest activities the questionnaire was distributed without verbal instructions to the participants. After an appropriate interval (one to two hours), each participant was asked to return the questionnaire to one of the pretest team members. At this time, the respondent's reactions to and comments about the questionnaire were solicited. Specific questions were provided to each interviewer to insure coverage of all the applicable features of the questionnaire. Those questions included the questionnaire format, length, understandibility and wording/question ambiguities. Other comments and suggestions for improvement were also solicited.

As a result of the pretesting and the comments received, various changes were made and the questionnaire package was revised into its final form. (Appendix B)

D. Compilation of Distribution Lists

In the first phase of the OASD study mentioned in Chapter I, functional teams visited various contract administration field activities, (DCAS, Army, Navy and Air Force.) Subsequent to these visits, these field activities were requested to provide the OASD teams with lists of the ten buying offices who were their major users in terms of number of contracts and dollar value. Upon receipt of these lists, an array of the user activities by service was constructed. Each time an activity was listed by one of the contract administration organizations, it was recorded on a listing. It was then determined subjectively that five or six user activities for each service would be utilized. The five or six activities most often listed for each of the

services were then selected. In the case of DSA, the activities most often listed were selected. With these parameters, a sample size of between eighteen and twenty-one activities (for the three services and DSA) would be available. This number of activities would be within the financial and time constraints in existence, would be a manageable sample and should provide a good cross-section of the buying offices' attitudes in the Department of Defense. This sample also avoided the danger of concentration of the study in only one or two large activities and a sample of attitudes based on circumstances unique to them.

In planning the questionnaire effort, it was originally envisioned that employee lists would be obtained from the selected activities. Selection of employees (using an even division between procurement and non-procurement personnel) would be accomplished by use of a random number table. The questionnaires would then be mailed to the selected individuals directly, and subsequently returned to the Naval Postgraduate School for processing. Historically, a return rate of between 25% and 35% of mailed questionnaires is generally experienced. Based on the fact that the covering memorandum from OASD would highlight the importance of the effort, a return rate of approximately 50% was anticipated to be reasonable. Therefore, a printing of 1,000 questionnaire packages was requested. The printing of 1,000 was felt to provide a sufficient number so that the sample would be significiant, yet be manageable. With a 50% return rate, a sample of 500 responses would be available for analysis.

A problem arose, however, in the plan to mail the questionnaires. Circumstances evolved which precluded the mailing of the questionnaires and an alternate approach was developed. In this approach, the user activities to be sampled were divided into three groups. Each member of the

questionnaire development team would take one group of activities, and in the space of a two week period, administer the questionnaire at each of his activities. He would also collect them from the participants prior to his departure from the activity. Three main benefits from this approach were envisioned. First, the time requirement would be considerably shortened. The questionnaires would be distributed, returned and be available for processing within a two week period. Secondly, the return rate would be considerably greater than the 50% originally estimated. The third benefit would come from the ability of the questionnaire administrator to interface directly with the command being sampled and avoid the possible distribution of questionnaires to biased and/or otherwise non-responsive (by virtue of their job) personnel. It would also enable the administrator to handle unexpected circumstances such as alternate selection of respondents in the absences of the selected respondents.

With the printing of 1,000 questionnaires, it was decided that 274 would be allocated to each service and an allocation of 130 questionnaires would be made to the Defense Supply Agency (DSA) buying activities. No DSA activity actually received sufficient mention in the listings of user activities to qualify for inclusion in the original selection. However, it was decided that the questionnaire would not accurately sample DOD-wide buying activities unless they were included.

The 274 questionnaires for each service were allocated to each activity based on the proportion of times they appeared on the contract administration activities' users listings. The DSA questionnaires were allocated to three DSA activities by roughly equating them with a Navy Inventory Control Point (ICP.) The Defense Personnel Support Center (DPSC) Philadelphia was allocated a

proportionately greater amount than the other two DSA activities. DPSC handles three very different commodities - clothing/textiles, medical and provisions. Provisions are so unique that they were deleted from the questionnaire effort. Equal allocations were then provided for the clothing/textile, and the medical categories.

Table 1 provides a summary of the activities sampled by service, including the percentage of time they appeared on the user listings received, and the number of questionnaires allocated to each activity. (Some minor errors are in the table due to rounding and an attempt to allocate the questionnaires to each activity in even numbers.)

TABLE 1

Distribution of Questionnaires

Service	Activity	% on Listing	Number of Questionnaires
ARMY	ASC St Louis	41%	112
	ECOM Ft Mommouth	24%	66
	Redstone Arsenal, AL	15%	42
	Missile Command, AL	12%	32
	EMDS Command, AL	8%	22
		100%	274
NAVY	NAVAIR Wash DC	37%	102
	NAVSEA Wash DC	25%	68
	ASO Philadelphia	13%	36
	SPCC Mechanicsburg	13%	36
	NAVELEX Wash DC	12%	32
		100%	274

A. F.	ASD Dayton	44%	120
	SAMSO Los Angeles	15%	42
	ALC Warner Robbins	12%	32
	ESD Hanscom, MA	12%	32
	ALC San Antonio TX	10%	26
	ALC Oklahoma City	7%	22
		100%	274
DSA	DPSC Philadelphia		60
	DESC Dayton		36
	DCSC Columbus		34
			130
	Total Questionnaires		952

E. Administering the Questionnaire

The questionnaires were administered to the selected activities within a three week period in the middle of January 1976.

Each user activity to be visited was requested to provide the name of a contact point for the questionnaire administrator. By telephone, these individuals were briefed on the purposes of the questionnaire and its part in the overall OASD study. The number of questionnaires to be distributed at that activity and the method of distribution were discussed. Each contact was requested to have available if possible, employee (both military and civilian) listings of

(a) all personnel within the procurement field, and

(b) all personnel outside the procurement field.

Both groups were to be familiar with one or more of the functional areas of the questionnaire (General Contract

Administration, Production, Quality Assurance or Engineering.) It was recognized that such a listing might preclude a completely random sample of questionnaire participants. However, with the limited number of questionnaires available, it was felt that more meaningful data would be obtained by structuring the sample to exclude those individuals who might not provide a useful input to the study. The selection of participants would still be made from the listings of qualified personnel utilizing a complete random selection.

With this advance contact made, the procedure followed at each activity was essentially the same for the three questionnaire administrators. In the morning of arrival at the user activity, the administrator would usually explain the questionnaire to the point-of-contact individual and others within the command whose subordinates would be involved in the questionnaire effort. Next, the two lists of employees were examinined and by the use of a random number table, the appropriate sample was selected. In addition, a number of alternative individuals were designated. The questionnaires, with envelopes number-coded for control purposes, were then distributed to the selected individuals. In geographic areas with more than one user activity, the administrator would then establish a return-time later in the day, and proceed to repeat the same procedure at the next activity.

The participants received the questionnaires at their desks and were requested to have them completed within usually the next four to five hours. This approach was felt to be preferable to having all the selected participants assemble in a conference room at a pre-arranged time and complete the questionnaire while assembled. Not only would it be extremely difficult to assemble all the individuals on such short notice, but it was felt that certain group

pressures (to finish first, not to finish last, etc.) would bias the responses to the questions. Completion of the questionnaire in the individual's own work environment, within an ample time period, was thought to provide a more conducive atmosphere for meaningful response.

At the previously established time, the questionnaire administrator returned to collect the completed questionnaires. At this time, it was originally contemplated that the administrator would be available for interviews with any respondents desiring to amplify or comment on the questionnaire. Unfortunately, time did not permit this interview procedure.

F. Returns Received

As was reported previously, 952 questionnaires were distributed to 19 different Department of Defense buying activities. Of this amount, 25 were not returned and 9 were rejected due to incomplete or missing data. The percentage of return was 96.4%, which is considerably higher than the historical percentage of returns on mailed questionnaires. Table 2 summarizes the returns.

TABLE 2

Returns Received

Questionnaires Distributed		952
Questionnaires Not Returned	25	
Questionnaires Rejected	9	34
Questionnaires Returned		918
Percentage of Return		96.4%

G. Processing the Returns

Upon receipt of a completed questionnaire, the five pages were first marked with the three digit numerical code from the questionnaire envelope to insure that the attitude/opinion responses were correctly identified with the demographic data sheet. The questionnaire was then edited for obvious mistakes and errors. Where a response area had been left blank, the question was edited with a "No Comment" response.

Upon completion of editing, the questionnaires were then processed through an OPSCAN Model 17 Reader and an IBM card data deck was produced. Each questionnaire package was coded into 5 data cards. The data deck was then verified to insure its accuracy with the actual questionnaire responses. Once this was done, the data deck was read onto a tape for ease of processing.

The Statistical Package for the Social Sciencies (SPSS) was used for processing the data. It is an integrated system of computer programs designed for the analysis of social science data. These programs were available for call-up in the W. R. Church Computer Facility at the Naval Postgraduate School utilizing an IBM 360/67 computer. Of the many SPSS procedures available for analysis of data, simple frequency distributions and crosstabulations with specific descriptive statistics were the primary programs used.

III. CHARACTERISTICS OF THE RESPONDENTS

This chapter summarizes the analysis performed on the demographic portion of the questionnaire. Appendix C with Tables C - 1 to C - 4 , contains additional statistics on the characteristics of the questionnaire respondents.

A. Type of Activity

The types of activities sampled are shown in Table 3.

TABLE 3

Type Of Activity

Category	Respondents	Percentage
Systems Command	386	42%
Buying Activity	297	32%
Requiring Act/Prog Office	105	11%
Inventory Control Point	71	8%
Stock Point-Depot-Center	45	5%
Other	14	2%
	918	100%

Respondents in Systems Commands and Buying Activities dominated the sources of respondents with almost three-quarters of the sample coming from that population. This distribution was in line with the characteristics desired of the sample. It was felt that while a greater

percentage of contractual actions are relatively low dollar value, approximately 90% of the dollars are spent in the larger dollar value procurements accomplished in these two types of activities. It was the intent of the questionnaire to measure the attitudes of personnel doing the larger procurements with the greater defense dollar impact.

B. Service of the Activity

It was originally decided that an even distribution of the questionnaires among the three services would be attempted with an arbitrary figure of 130 questionnaires being distributed to the DSA activities. The results of questionnaire distribution are shown in Table 4.

TABLE 4

Service Distribution

Service	Allocated	Returned	Percentage
Army	274	253	92.3%
Navy	274	254	92.7%
Air Force	274	279	101.8%
DSA	130	128	98.5%
	952	914	96.0%

In the case of the Air Force, four questionnaires over the allocated amount were returned. This was due to the recovery of questionnaires that had been allocated and distributed as alternates in case of employee absentees at the time of administration. Four individuals returning the questionnaire had marked "Other" as the service of the activity. With these responses included, 918 of 952 questionnaires were returned for a rate of return of 96.4%.

C. Service of the Respondents

Of the 918 participants, 124 or 13.5% were in the military service and 794 or 86.5% were civil service personnel. Table 5 provides more detailed information.

TABLE 5

Service of the Respondents

Service	Respondents	Percentage	Cumulative Percentage
Army	24	2.6%	2.6%
Navy	30	3.3%	5.9%
Air Force	70	7.6%	13.5%
Civil Service	794	86.5%	100.0%
	918	100.0%	

D. Rank and GS Rating of the Respondents

A little over 60% of the respondents to the questionnaire were of the Major/Lieutenant Commander or GS-12 civil service grade or lower. Important in this statistic is the belief that the sample was composed primarily of personnel at the working level of the organizations visited. The individuals who evaluated the contract administration functions were felt to be those with hands-on experience and who possessed the necessary working knowledge of the contract administration components. Table 6 furnishes the detailed analysis of the rank and GS rating structure of the sample.

TABLE 6

Rank and GS Rating

Category	Respondents	Percentage
O-2, GS 10 and below	149	16%
O-3,O-4, GS 11-12	414	45%
O-5, GS 13-14	303	33%
O-6, GS-15	50	6%
	916	100%

Two respondents indicated the category "Other" in their responses.

E. Age of the Respondents

Approximately two-thirds of the respondents were under 50 years of age. The greatest number of respondents were in the age group of 41 - 50 years which represented 33% of the sample. The middle categories of age (31 - 60) accounted for 84% of the sample. In Table 7, a detailed analysis is provided.

TABLE 7

Age of the Respondents

Age Category	Respondents	Percentage
20 - 30	108	12%
31 - 40	204	22%
41 - 50	306	33%
51 - 60	264	29%
Over 60	35	4%
	917	100%

One respondent did not mark this category of the questionnaire.

F. Supervisor Status

256 respondents (28%) indicated that they were supervisors, while 662 (72%) indicated that they were not. Of the participants indicating that they were supervisors, Table 8 provides a breakdown of the number of employees supervised. Two respondents who indicated supervisor status, did not indicate the number of employees supervised. There is a fairly even distribution among the categories of the number of people supervised.

TABLE 8

Number of Employees Supervised

Number of Employees	Respondents	Percentage
1 to 5	68	27%
6 to 10	64	25%
11 to 20	72	28%
Over 20	50	20%
	254	100%

G. Education Level

61% of the respondents stated that they were college graduates. Table 9 shows the education distribution of the questionnaire sample.

TABLE 9

Education Level of Respondents

Category	Respondents	Percentage
High School	125	13%
Some College	235	26%
College Graduate	237	26%
Some Graduate Work	180	20%
Graduate Degree	139	15%
	916	100%

Two individuals did not respond to this question.

H. Experience Level of the Respondents

The experience level of the respondents was measured in two ways. First, the experience level in the respondents' present assignment was solicited. Secondly, the respondents' total procurement related experience was sought.

Approximately 50% of the respondents had 5 years or more experience in their present assignment and less than 10% had been in their current job for less than one year. As far as the total procurement related experience is concerned, 76% had over 5 years or more of experience and less than 5% had under one year of procurement related experience. Tables C - 1 and C - 2 in Appendix C provide the detailed statistical analysis of the experience category.

I. Product Specialty

Nine product categories were available for respondent

consideration. In addition, an "Other" category was provided in crder to provide a response band for all questionnaire participants. 46% of the respondents were involved in the aircraft and missile product areas, while the electronics area captured almost 25% of the sample. The remaining prcduct categories represented from 7% (Services) to less than 1% (Electrical) of the sample. A detailed breakdcwn is provided in Table C - 3 of Appendix C.

J. Types cf Procurement

82.4% of the respondents indicated that the negotiated procurement was most frequently encountered. This represented 756 of the 918 respondents. Table 10 provides the data.

TABLE 10

Type Procurement Most Encountered

Category	Respondents	Percentage
Negotiated	756	82.4%
Formally Advertised	162	17.6%
	918	100.0%

The respcndents were asked to indicate the contract type most often encountered. Fixed price type contracts were most often encountered by 69% of the respcndents, cost-reimbursement contracts by 29% and other instruments such as Basic Crdering Agreements by 2%. Table 11 and Table C-4 in Appendix C provide a more extensive breakdown cf the responses.

TABLE 11

Type Contract Most Encountered

Category	Respondents	Percentage
Fixed Price	633	69%
Cost Reimbursement	262	29%
Other	23	2%
	918	100%

The number of contracts encountered in a year and the average dollar value per contract are closely related. Table 12 outlines the two characteristics in the study sample.

TABLE 12

Number and Average Dollar Value of Contracts

Number			Average Dollar Value		
Category	Respond	Percent	Category	Respond	Percent
Under 5	227	25%	Over $5M	241	26%
5 - 10	118	13%	$1 - 5M	129	14%
11 - 20	113	12%	$.5 - 1M	87	10%
21 - 50	127	14%	$.1 - .5M	156	17%
Over 50	333	36%	Under $.1M	305	33%
	918	100%		918	100%

K. Contract Administration Component Utilization

Table 13 provides a general breakdown of the respondents' utilization of the various contract

administration agencies. The figures represent the number of respondents utilizing the contract administration services provided by the indicated agency. In the table, many respondents indicated that they utilized more than one CAS organization. The percentage figure is the number of individuals indicating they used the corresponding CAS organization in relation to the total respondents to the questionnaire. (918)

TABLE 13

Utilization of CAS Services

Component	Respondents	Percentage
DCAS	821	89%
Army	240	26%
Navy	437	48%
Air Force	496	54%
Buying Office	564	61%
Other	79	9%

Of the respondents using DCAS for contract administration services, Table 14 furnishes an analysis on the percentage of utilization.

TABLE 14

Utilization of DCAS

Category	Respondents	Percentage
0 - 25%	208	25%
26 - 50%	108	13%
51 - 75%	113	14%
76 - 100%	307	38%
Unknown	85	10%
	821	100%

Lesser numbers of respondents indicated that they used individual service plant offices. For the individuals indicating utilization of the service contract administration activities, Table 15 provides the analysis for the Army Plant Activities, Table 16 for the NAVPROs and Table 17 for the AFPROs.

TABLE 15

Utilization of Army Plant Activities

Category	Respondents	Percentage
0 - 25%	128	53%
26 - 50%	23	10%
51 - 75%	20	8%
76 - 100%	27	11%
Unknown	42	18%
	240	100%

TABLE 16

Utilization of the NAVPROs

Category	Respondents	Percentage
0 - 25%	270	62%
26 - 50%	49	11%
51 - 75%	19	4%
76 - 100%	28	7%
Unknown	71	16%
	437	100%

TABLE 17

Utilization of the AFPROs

Category	Respondents	Percentage
0 - 25%	297	60%
26 - 50%	62	12%
51 - 75%	20	4%
76 - 100%	53	11%
Unknown	64	13%
	496	100%

IV. AN ANALYSIS OF THE SAMPLE

This chapter describes the four areas of analysis performed on the responses to the questionnaires. Part 1 compares selected characteristics of the questionnaire respondents to those same characteristics in the DOD procurement workforce. Part 2 examines the relationship between the overall rating given to each of the four general categories as indicated by responses to the question, "Overall, I would rate the performance of the _____ component as:", and the responses of the participants to the individual functions within those general categories. Part 3 discusses the influence of certain demographic characteristics on the responses to the overall ratings for each of the four general categories. Finally, Part 4 compares the overall ratings given to DCAS and the Plant Cognizance activities in each of the functional areas to determine if there exists a significant difference in the ratings. Conclusions based upon this analysis are given in Chapter V. In addition, two appendices contain detailed frequency distributions. Appendix G reflects the total results of the survey for the demographic characteristics of the respondents and their answers to the questions in each category. The absolute frequencies and their relative frequency percentages are given for each response. Those cases in which the respondent did not answer a question or indicated "No Comment" were identified as missing values. As such, they are not included in the adjusted frequency percentages. Appendix H contains the total results obtained for each of the categories after adjusting the responses

into a favorable/unfavorable categorization as noted in Chapter II, Part B.

Part 1

In this first part, five characteristics of the questionnaire sample are examined with regards to the same characteristics that are present in the Department of Defense. The characteristics examined are Age, Experience Level, Rank/GS Rating Level, Type of Procurement and Type of Contract Most Encountered. Data for the Department of Defense, unless otherwise noted, was obtained from three sources: OASD (I and L), Report of the Long Range Manpower Policy Board, February 1969, OASD (Comptroller), Military Prime Contract Awards, Fiscal Year 1975 and The Report of the Commission on Government Procurement, December 1972. It is recognized that the sources of data pertaining to the characteristics of personnel in the procurement workforce cover the entire workforce, including the contract administration component. The questionnaire sample did not contain this component. This factor was considered when drawing conclusions from the analysis.

The statistical measure used in this part is the Chi-Square (2x2), goodness of fit test. It is utilized to determine whether the questionnaire sample was selected from the DOD population with a certain probability distribution. With this measure, the frequency distribution for our sample is compared with the frequency distibution expected if the DOD population probability distribution exists. This use of the Chi-Square is analogous to the use of the t-test to test hypotheses concerning a population mean. Chi-Square is defined as:

$$\chi^2 = \sum_{i=1}^{k} \frac{(O_i - E_i)^2}{E_i}$$

where O_i represents the observed frequencies and E_i the expected frequencies.

Before using the Chi-Square test, certain conditions and assumptions must be satisfied. First, one must assume that random sampling was used in obtaining the sample. In Chapter III, the use of random number tables to chose sample participants was detailed. Secondly, the observations should be independent of each other. Again in Chapter III, the method of questionnaire administration was discussed. Responses to the questionnaire were accomplished by each participant in his or her own work area, independent of any other respondent. Thirdly, each expected frequency should be greater than one. In making the computations, some collapsing and grouping of response categories might be undertaken to satisfy this condition. Lastly, the sum of the observed frequencies and the sum of the expected frequencies should be equal. In arriving at the DOD population frequencies, data from the three aforementioned reports was converted from a frequency figure to a percentage and this percentage was then applied to the number of respondents in the sample for that characteristic to obtain the expected population frequencies. For example, in the case of Type of Procurement, the data source (FY 1975 Military Prime Contract Awards) stated that 87.7% of the total procurement dollars, less Intragovernmental procurements, were negotiated, and 12.3% were advertised. Application of these percentages to the sample total of 918 yields the figures of 805 and 113 for negotiated and formally advertised procurements respectively. The same method was applied to the other four characteristics while

using the available data sources.

An alpha (α) level of .05 was used and values for designating the critical region are presented for each characteristic examined. In all cases the null hypothesis tested was that the sample selected (for that particular characteristic) was representative of the DOD population. The alternate hypothesis was that the sample selected was not representative of the DOD population.

A. Age

Table 18 shows the Observed and Expected frequencies for four age categories. The source of the expected data is the Report of the Commission on Government Procurement.

TABLE 18

Age Frequencies

Category	Observed	Expected
20 - 30	108	98
31 - 40	204	188
41 - 50	306	305
51 and older	299	326
	917	917

For 3 degrees of freedom and α equal to 0.05, the Chi-Square critical region is defined as 7.82 to infinity. The Chi-Square for Age equals 4.62, and one fails to reject the null hypothesis that the sample selected was representative of the DOD population with regards to its age.

Since the expected values are derived from the procurement workforce in 1971, some shifting of frequencies in the intervening years to the time of the OASD survey would be expected. However, the shifting of individuals would most likely be into the younger age group, through the other groups and out of the oldest age category. Such a shift would lend itself to a better fit to the observed frequencies.

B. Procurement Related Experience Level

Table 19 indicates the frequencies for the procurement related experience level of the population and sample respondents. Source data is from the Report of the Commission on Government Procurement.

TABLE 19

Procurement Related Experience Frequencies

Category	Observed	Expected
Less than 1 yr	39	75
1 - 5 yrs	182	259
5 - 10 yrs	168	219
10 - 20 yrs	346	266
Over 20 yrs	183	99
	918	918

For 4 degrees of freedom, α equal to 0.05, the Chi-Square critical region is defined as 9.49 to infinity. The Chi-Square value for procurement related experience is 147.94 and the null hypothesis that the sample selected was representative of the DOD population with regards to procurement related experience is rejected.

It should again be pointed out that the source of the observed data is dated. Shifts in the expected frequencies would be expected, but would be difficult to predict. However, the observed and expected frequencies do follow the same bimodal pattern with peaks at the 1 to 5 year and the 10 to 20 year categories. While the frequencies are not statistically alike, they do possess some similar characteristics.

C. Rank and GS Rating

Table 20 provides the data concerning the observed and expected frequencies for the rank and GS ratings of the sample and hypothesized population. Source of the expected frequencies is the 1969 Manpower Report.

TABLE 20

Rank/GS - Rating Frequencies

Category	Observed	Expected
O-2, GS-10 and below	149	433
O-3,4, GS 11-12	414	378
O-5, GS 13-14	303	96
O-6, GS-15 and above	50	9
	916	916

For 3 degrees of freedom, and α equal to 0.05, the Chi-Square critical region is defined as 7.82 to infinity. The Chi-Square value for the rank/GS rating level is extremely large and the null hypothesis that the sample was representative of the DOD population with regards to rank/GS rating is rejected. However, it should be mentioned that the source data for the expected frequencies is for the

civilian community only and is derived from the 1969 Report of the Long Range Logistics Manpower Policy Board.

D. Type Of Procurement

As opposed to the characteristics of the sample and population individuals, two measures of the characteristics of the business being done by the questionnaire respondents were examined. These two areas were the type of procurement (negotiated or formally advertised) and the type of contract utilized (cost-reimbursable or fixed price.) Other characteristics such as the average dollar value per contract or the average number of contracts experienced during a year, were considered to be possibly confusing and subject to ambiguous interpretation by the respondents. Type of procurement and type of contract were considered to be clear-cut and understandable to all questionnaire participants. Comparison of the sample figures to those representing DOD procurement actions were felt to be among the most accurate tests of sample to population validity.

Table 21 provides the frequencies on the type of procurement experienced. Source data for the expected frequencies in both Tables 21 and 22 is derived from Fiscal Year 1975 Military Prime Contracts Awards report.

TABLE 21

Procurement Type Frequencies

Category	Observed	Expected
Negotiated	756	805
Formally Advertised	162	113
	918	918

For 1 degree of freedom and α equal to 0.05, the Chi-Square critical region is defined as 3.84 to infinity. The Chi-Square value for sample procurement type is 24.23, and the null hypothesis that the sample selected was representative of the DOD population with regards to procurement type experienced is rejected.

Even though the null hypothesis is rejected, it may be reasoned that the heavier emphasis on negotiated procurements resulted from the inclination of the questionnaire toward large activity procurements with their dependence on negotiation.

E. Type of Contract

Table 22 presents the frequencies for type of contract used in the questionnaire sample and the hypothesized DOD population. The category "Other " which included such instruments as Blanket Ordering Agreements, was omitted from consideration.

TABLE 22

Contract Type Frequencies

Category	Observed	Expected
Fixed Price	633	647
Cost-Reimbursement	262	243
	895	895

For 1 degree of freedom and α equal to 0.05, the Chi-Square critical region is defined as 3.84 to infinity. The Chi-Square value for contract type equals 1.09, and the

null hypothesis that the sample selected was representative of the DOD population with regards to contract type utilized is rejected.

Part 2

In this second part, the overall rating given to both DCAS and the Plant Cog activities was compared to the responses given on each of the functional questions in that general category. The purpose of the analysis was to determine whether the ratings given to the individual functional questions were independent of the ratings given in the overall question. Since more than one attribute was under investigation, a Chi-Square test for independence was used to analyze the data.

The Statistical Package for the Social Sciences (SPSS) was used to compute the Chi-Square statistic for each of the questions. However, statistical significance depends not only on the strength of the observed relationship (independent vs. dependent), but on the size of the sample. Since each respondent did not answer every question, the sample size varied in each comparison. Further tests of statistical significance only indicate the likelihood that an observed relationship actually exists in the universe; they do not tell how strong the relationship is. For these reasons, additional statistics to correct for sample size and to measure the strength of the relationships were computed. These statistics were:

(1) PHI (ϕ) - For a 2 x 2 contingency table, Phi makes a correction for the fact that the value of Chi-Square is directly proportional to the number of cases (N) by adjusting the Chi-Square value. Its formula is:

$$\phi = \left(\frac{\chi^2}{N} \right)^{1/2}$$

Phi takes on the value of 0 when no relationship (independence) exists, and the value of + 1 when the variables are perfectly related (dependence.) Although a universally accepted definition of the strength of this association is not possible, Marascuilo [1] suggests the following guidelines:

Strength of Association	Range of Phi
Weak	0 < Phi < .33
Moderate	.33 < Phi < .67
Strong	.67 < Phi < 1.00

(2) Contingency Coefficient (Cont Coeff) - This is also a measure of association based upon the Chi-Square measure. Its formula is:

$$C = \left(\frac{\chi^2}{\chi^2 + N} \right)^{1/2}$$

The Contingency Coefficient has a minimum value of 0, but has a maximum value of .707 when using a 2 x 2 contingency table. McNemar [2] suggests that the Contingency Coefficient has a decided advantage over other measures of relationship since no assumptions involving the nature of

the variables need be met.

(3) Lambda - This measure of association determines the percentage of improvement in our ability to predict the value of the dependent variable once the value of the independent variable is known. The formula is:

$$\lambda_b = \frac{\sum \max f_{jk} - \max f_k}{N - \max f_k}$$

where $\sum \max f_{jk}$ represents the sum of the maximum values of the cell frequencies in each column, and $\max f_k$ represents the maximum value of the row totals. The maximum value of Lambda is 1.0 which occurs when prediction can be made without error, i.e., when each independent variable category is associated with a single category on the dependent variable.

Appendix D, Tables D - 1 through D - 8, reflects the statistical measures obtained by using a 2 x 2 contingency table. In the contingency tables, responses for each functional question and the overall question are compared with the responses categorized as either favorable or unfavorable with no comment or no answer responses omitted. In all cases, the Chi-Square statisitc was used to test the null hypothesis that no relationship existed between the variables (independence.) The alternate hypothesis was that a systematic relationship (dependence) did exist. Since the SPSS program computed the actual levels of significance, no prior assumptions were made concerning an acceptable level of significance. Thus, a level of significance of .0001 would indicate that the cell frequencies deviate so much from what would be expected under conditions of statistical independence, one would conclude that a systematic relationship does exist, although one would be taking a chance of being wrong one (1) time out of every 10,000. In

other words, a table with as large a deviation from expected frequencies would occur by chance in only one (1) sample out of 10,000. In this case, it could be said that the Chi-Square is statistically significant at the .0001 level.

A. General Contract Administration

Table D - 1 in Appendix D reflects the result of the analysis for the ratings given DCAS in the General Contract Administration category. In all cases, one has to reject the null hypothesis that no relationship existed (independence), and accept the alternate hypothesis that a systematic relationship does exist (dependence.) Furthermore, in all cases, this result was statistically significant at a level of less than .0001. Using the Phi statistic to measure the strength of the relationship with the adjustment for the number of cases provided the following results in accordance with Marascuilo's guidelines:

Strength of Association	Number of Questions
Weak	6
Moderate	15
Strong	None

The results obtained for the Contingency Coefficient also generally demonstrated a similar strength of association. The Lambda statistic showed a greater variation. Its computation indicated that knowledge of the rating given to a functional question would increase an individual's predictive ability concerning the rating given the overall question from zero improvement or 0% to more than a 33% improvement.

Table D - 2 of Appendix D indicates the results of the analysis for the ratings given Plant Cognizance activities in the General Contract Administration category. Using a level of significance of .05 for acceptance of the null hypothesis, it was determined that the null hypothesis would be accepted in two (2) cases while the alternate hypothesis would be accepted in all other cases at a level of significance of .0002 or less. Use of the Phi statistic showed the following results:

Strength of Association	Number of Questions
Weak	5
Moderate	16
Strong	None

The Contingency Coefficient again verified the results obtained for Phi. However, the Lambda measure indicated 11 questions where an individual's predictive ability would not show improvement and only 2 questions where it would be above the 20% level.

B. Production

Table D - 3 reflects the results of the analysis for the ratings given DCAS in the Production category. In all cases, the null hypothesis that no relationship (independence) exists was rejected, and the alternate hypothesis that a systematic relationship does exist (dependence) was accepted. In all cases, this result was statistically significant at a level of less than .0001. The Phi statistic showed the following results:

Strength of Association	Number of Questions
Weak	1
Moderate	16
Strong	None

The Contingency Coefficient verified the results obtained for Phi. The Lambda statistic demonstrated a much stronger improvement in the predictive ability relative to the rating given the overall question. Ten questions were characterized as above 30% in predictive improvement, while no questions indicated zero improvement in predictive ability.

Table D - 4 contains the results of the analysis for the ratings given the Plant Cog activities in the Production functions. In all cases, the null hypothesis that no relationship (independence) exists is rejected, and the alternate hypothesis that a systematic relationship (dependence) exists is accepted. In addition, in all cases, this result was statistically significant at the level of less than .0001. The Phi statistic showed the following results:

Strength of Association	Number of Questions
Weak	1
Moderate	16
Strong	None

The Contingency Coefficient verified the results obtained for Phi. The Lambda statistic did not show as strong an improvement in predictive ability relative to the overall rating as the other three categories. Only 4 questions were above 30% improvement in predictive ability, and again, none of the questions showed zero improvement.

C. Quality Assurance

Table D - 5 of Appendix D shows the results of the analysis for the ratings given DCAS in Quality Assurance. In all cases, the null hypothesis that no relationship (independence) exists is rejected, and the alternate hypothesis that a systematic relationship (dependence) is accepted. In all cases, this result was statistically significant at a level of less than .0001. The Phi statistic demonstrated the following results:

Strength of Association	Number of Questions
Weak	None
Moderate	16
Strong	None

In addition to the above distribution, all of the Phi statistics were above .50. The Contingency Coefficient statistics confirmed a strong association. The Lambda statistic demonstrated a much stronger improvement in predictive ability relative to the rating given the overall question. Every question was above the 30% level with 8 of them being above the 50% level.

Table D - 6 indicates the results of the analysis for the ratings given the Plant Cognizance activities in the Quality Assurance area. In every case, the null hypothesis that no relationship (independence) exists is rejected and the alternate hypothesis that a systematic relationship (dependence) does exist is accepted. In all cases, this result was statistically significant at a level of less than .0001. The Phi measure showed the following results:

Strength of Association	Number of Questions
Weak	None
Moderate	16
Strong	None

All of the Phi statistics were above .51. Furthermore, the Contingency Coefficient confirmed a strong association. The Lambda statistic demonstrated a strong improvement in predictive ability relative to the rating given the overall question. Twelve questions were above the 30% level with three questions above 50%.

D. Engineering

Table D - 7, Appendix D, shows the results of the analysis for the ratings given DCAS in Engineering. In all cases, the null hypothesis that no relationship (independence) exists is rejected, and the alternate hypothesis that a systematic relationship (dependence) exists is accepted. In all cases, this result was statistically significant at a level of less than .0001. The Phi statistic generated the following frequencies:

Strength of Association	Number of Questions
Weak	None
Moderate	11
Strong	5

The Contingency Coefficient confirmed a strong association. The Lambda statistic also showed a strong improvement in predictive ability concerning the rating given the overall questions. All the questions were above the 30% level with 13 questions being above 50%.

Table D - 8 reflects the results of the analysis for the ratings given Plant Cognizance activities in the Engineering functions. In all cases, the null hypothesis that no relationship (independence) exists is rejected, and the alternate hypothesis that a systematic relationship (dependence) does exist is accepted. Again, in all cases, this result was statistically significant at a level of less than .0001. The Phi statistic showed the following results:

Strength of Association	Number of Questions
Weak	None
Moderate	15
Strong	2

The Contingency Coefficient confirmed a strong association. The Lambda statistic demonstrated a strong improvement in predictive ability relative to the rating given the overall question. All the questions were above the 30% level with 8 questions above 50%.

Part 3

In this third part, the overall rating given to both DCAS and the Plant Cognizance activities was compared to each of the demographic characteristics. A Chi-Square test for independence was used to analyze the data. The purpose of the test was to determine whether the ratings given each CAS component in the overall question were independent of the demographic characteristics of the questionnaire respondents.

Before the SPSS Program could be used to compute the Chi-Square statistic and the additional statistics to

measure the strength of association and correct for differences in sample size, certain data modifications were accomplished. In using the Chi-Square distribution in these circumstances, one must be careful not to utilize categories having small expected frequencies. Although the rule of thumb in Chi-Square tests had been that the expected frequency should be at least five, recent research has indicated that an expected frequency of one or more in each category is usually sufficient. [3] The simpliest method of data modification to increase the expected frequencies for this test is to collapse two or more adjacent or similar categories. The revised categories are shown in Appendix D. As in Part 2, contingency tables were constructed and the same statistics to measure the strength of association were utilized with one exception, that of Phi. When Phi is calculated for a table which is not 2 x 2, it has no upper limit. Therefore, since most of the tables for Part 3 were larger than the 2 x 2 version, Cramer's V was used to adjust Phi for either the number of rows or the number of columns in the table, depending upon which of the two is smaller. The formula for Cramer's V is:

$$V = \left(\frac{\phi^2}{\min (R-1), (C-1)} \right)^{1/2}$$

Cramer's V ranges from zero to +1 when several nominal categories are involved.

In all cases, the Chi-Square statistic was utilized to test the null hypothesis that no relationship (independence) existed between the variables. The alternate hypothesis was that a systematic relationship (dependence) did exist. Since the SPSS program computed the actual level of significance, no prior assumptions were made concerning an acceptable level of significance. However, since "ordinarily, social scientists accept the .05 level of

significance as the value of alpha," [4] It was decided that this level would be used for the purposes of testing. It was also decided that one would consider the strength of association when arriving at conclusions based upon the testing and results thereof.

Appendix F contains the data obtained using the aforementioned analysis.

A. General Contract Administration

Table F - 1 in Appendix F reflects the results of the analysis for DCAS in the General Contract Administration category. In only four cases would the null hypothesis that the demographic characteristic was independent of the overall rating at the .05 level of significance be rejected. The four questions pertained to the questionnaire respondents' Service of the Activity, their Job Title, their Supervisory Status and Current Product Specialty. Further examination of the statistics for these four questions indicate only a weak strength of association and only in the case of Job Title was there any increase in the ability to predict the overall rating once the demographic characteristic was known. This one increase was less than 2%.

Table F - 2 reflects the results of the analysis for the Plant Cognizance activities in the General Contract Administration category. In all cases except one , the null hypothesis of independence would be accepted at the .05 level of significance. The question pertaining to Job Title showed a weak degree of association with both Cramer's V and the Contingency Coefficient being just over .16. Further, Lambda indicated a weak association indicating that the

predictive ability concerning the overall rating would not show a statistical increase even if the respondent's Job Title was known.

B. Production

Table F - 3 contains the results of the analysis for DCAS in the Production area. In only one case was the null hypothesis (independence) rejected in favor of the alternate hypothesis that the variables were dependent. Both Cramer's V and the Contingency Coefficient measured the degree of association at just over .2. Lambda indicated that predictive ability, knowing the respondent's Job Title, would only increase approximately 2.7%.

Table F - 4 in Appendix F reflects the result of analysis for the Plant Cognizance activities in the Production category. In only one case was the null hypothesis (independence) rejected. The question pertaining to the Number of Employees Supervised indicated that there was a degree of dependence. However, this question is somewhat misleading because one of the valid responses to this question was that the respondent was not a supervisor. Therefore, since one of the categories was totally dissimilar from the other, this question was considered invalid for statistical purposes, and was not analyzed further.

C. Quality Assurance

Table F - 5 in Appendix F reflects the result of the analysis for DCAS in the Quality Assurance category. In

four of the cases, the null hypothesis (independence) was rejected in favor of the alternate hypothesis. The demographic characteristics of Job Title, Supervisory Status, Number of Employees Supervised and Current Product Specialty represented the four rejections of the null hypothesis. The Number of Employees Supervised was disregarded for the reasons outlined above. Job Title showed the highest degree of association with both Cramer's V and the Contingency Coefficient being about 27%. Lambda indicated an improvement of over 9% in predictive ability. Supervisory Status and Current Product Specialty both showed a lesser degree of association.

Table F - 6 reflects the result of the analysis for Plant Cognizance activities in the Quality Assurance category. In all cases except one, the null hypothesis was easily accepted with most variables indicating a strong degree of independence. Job Title was the only variable which met the test for dependence, but while Cramer's V and the Contingency Coefficient showed a strength of association at the .22 level, Lambda showed only a 1% increase in predictive ability.

D. Engineering

Table F - 7 contains the results of the analysis for DCAS in the Engineering category. In two cases, the null hypothesis (independence) was rejected in favor of the alternate hypothesis (dependence). Type of Activity and Supervisory Status would both be considered dependent at the specified level of significance, but other variables which met the test for independence still showed a greater degree of association. As an example, nine other variables showed an increase in predictive ability while still meeting the

test for independence. Job Title met the test for independence while showing a Cramer's V and Contingency Coefficient greater than .17 with an increase in predictive ability of more than 9%.

Table F - 8 in Appendix F reflects the result of the analysis for Plant Cognizance activities in the Engineering category. Again, in only two cases was the null hypothesis (independence) rejected in favor of the alternate hypothesis (dependence.) Type of Activity and Average Dollar Value Per Contract were both considered dependent at the specified level of significance. Cramer's V and the Contingency Coefficient were less than .2 in both cases with an insignificant increase in predictive ability. Just as in the analysis of DCAS Engineering, other variables indicated just as strong or stronger degrees of association while still meeting the test for independence.

Part 4

To determine if there was a significant difference between the overall ratings given DCAS and Plant Cognizance activities in each category, the results of the analysis were examined from two different perspectives. First, the overall results for the entire sample were compared on the basis of a favorable/unfavorable response. Secondly, the SPSS program had the capability to select only those respondents who had evaluated both DCAS and the Plant Cognizance activities on the overall questions, thereby giving a measure of "head-to-head" competition with an understandably smaller sample. The favorable/unfavorable categorization was again used.

Table 23 reflects the results obtained when the entire

sample was included. It should be noted that some respondents may have rated only DCAS or Plant Cognizance activities and not both.

TABLE 23

Overall DCAS / Plant Cog Ratings
(Entire Sample)

	DCAS			Plant Cog		
	Favor	Unfav	No.	Favor	Unfav	No.
Cont Admin	72.4	27.6	586	79.2	20.8	466
Production	67.5	32.5	453	72.6	27.4	365
C. A.	64.0	36.0	445	70.5	29.5	295
Engineering	46.9	53.1	326	55.7	44.3	264

Table 24 reflects the results obtained when only the respondents who rated both DCAS and Plant Cognizance activities were considered. The number in parentheses represents the number of respondents which met this criterion.

TABLE 24

Overall DCAS / Plant Cog Ratings
(Limited Sample)

	DCAS		Plant Cog	
	Favor	Unfavor	Favor	Unfavor
Cont Admin (384)	72.7%	27.3%	77.6%	22.4%
Prod (297)	67.3%	32.7%	71.7%	28.3%
C. A. (243)	60.5%	39.5%	69.5%	30.5%
Engin (203)	41.4%	58.6%	51.2%	48.8%

A Chi-Square test of homogeneity was used to test whether there was a real difference of opinion concerning the performance of DCAS and the Plant Cognizance activities. The Chi-Square test of homogeneity is an extension of the Chi-Square test of independence. It is, however, associated with different problems. Tests of homogeneity are concerned with whether different samples (in our case, different degrees of satisfaction) really are homogeneous with the population. This would mean that there is no real difference of opinion among the respondents on the ratings given to the two types of CAS activities. Thus, the null hypothesis is that the favorable/unfavorable classifications are homogeneous insofar as the opinion of the respondents is concerned. Chou [5] suggests that "when we say things are homogeneous, we mean they have something in common or they are the same or they are equal." The alternate hypothesis is that the classifications are not homogeneous. In each case, a level of significance of .05 was selected for the same reasons cited previously. Therefore, the null hypothesis would be rejected if the computed Chi-Square value was greater than 3.84. The formula used to compute the testing statistic was:

$$\chi^2 = \sum_{i=1}^{k} \frac{O_i^2}{E_i} - N$$

where O_i was the observed response frequency, E_i the expected response frequency if the null hypothesis stated previously was true and (N), the total number of respondents in a particular sample.

The results of the above analysis to determine if there was a significant difference in the overall ratings given to DCAS and to the Plant Cognizance activities in each category are summarized in Table 25.

TABLe 25

Chi-Square Homogeneity Test

Category	Chi-Square Entire	Result On Null	Chi-Square Limited	Result On Null
Ccnt Admin	6.52	Reject	2.52	Accept
Production	2.45	Accept	1.34	Accept
Q. A.	3.34	Accept	4.38	Reject
Engineering	4.46	Reject	3.96	Reject

Only in the case of Producticn could the null hypothesis that the classifications are homogeneous be accepted under the criteria of both samples. Futhermore, only in the case of Engineering would the null hypothesis in both samples be rejected. It could then be ccncluded that homogeneity did not exist, and the ratings were not the same or equal. For both Contract Administration and Quality Assurance, conflicting results for the two sample were obtained.

V. CONCLUSIONS

This chapter presents a summary of the results of the analysis performed in Chapter IV. Each part of the first portion of this chapter corresponds to the same numbered part in the previous chapter. Based upon the analysis, certain conclusions will be drawn which reflect the views only of the authors of this research. In addition, the second portion of this chapter will provide some recommendations for further study.

CONCLUSIONS

Part 1

In Part 1 of Chapter IV, five characteristics of the users' satisfaction questionnaire respondents were compared to the same characteristics present in the DOD procurement workforce population. Data more current than 1972 was not available. However, where possible, inferences on projection of this data to the present are included in the summary.

Of the five characteristics utilized, two (Age and Type of Contract) showed statistically that the questionnaire sample was representative of the DOD population. Of the other three characteristics which did not show this relationship at a statistically satisfactory level, one of them (Procurement Related Experience) demonstrated a similar

bimodal distribution pattern from which might be inferred some relationship, although, not a statistically significant one. Of the two remaining characteristics, Procurement Type (Negotiated or Formally Advertised) indicated for both the observed and expected frequencies, Negotiated frequency percentages in the 80's (Negotiated of Sample = 82.4%, Negotiated of Population = 87.7%.) The final characteristic (Rank and GS Rating) demonstrated no statistical or inferable relationship.

Based on the above, it is concluded that the questionnaire sample was representative of the DOD procurement workforce.

Part 2

A. General Contract Administration: For the General Contract Administration category, the overall ratings given both DCAS and Plant Cognizance activities were dependent in all but two of the functional areas (Administration of Progress Payments and Surveillance of Contractor Industrial Security Programs) upon the ratings given the individual functions. In the majority of cases, the strength of this association could be termed moderate. It is therefore concluded that the overall rating was not arbitrary, but did reflect the ratings given in response to the functional questions.

B. Production: The overall ratings given both DCAS and the Plant Cognizance activities were dependent in all cases upon the ratings given the individual functional questions. In almost all cases, the strength of this association could be termed moderate with a general increase in predictive ability relative to the overall rating once the rating to any individual question was known. It is concluded that the overall rating was not arbitrary, but was a reflection of

the ratings given in response to the functional questions.

C. Quality Assurance: The overall rating given both DCAS and the Plant Cognizance activities were dependent in all cases upon the ratings given the individual functions for Quality Assurance. In all cases, the strength of this association could be termed at least moderate with all but three of the thirty-two functional questions placing on the high side of the moderate range. Twelve of the thirty-two questions placed higher than .60. It is concluded that the overall rating is not arbitrary, but is a reflection of the ratings given in response to the individual functional questions.

D. Engineering: The overall ratings given both DCAS and the Plant Cognizance activities were dependent in all cases upon the ratings given the individual functions and reflected the strongest degree of association in all statistical areas. Seven of the thirty-two relationships were categorized as strong, and twenty-five of the thirty-two placed on the higher side of the moderate range. It is concluded that the overall rating for Engineering was not arbitrary, but was a reflection of the ratings given in response to the individual functional questions.

E. Summary: In all four categories, General Contract Administration, Production, Quality Assurance and Engineering, the ratings given to the overall questions ("Overall, I would rate the performance of the _____ component as:") are an accurate reflection of the responses given to the individual questions, and represent the respondents' evaluations of the applicable categories. In other words, the overall ratings are consistent with the ratings given in the individual functional questions.

Part 3

In Part 3 of Chapter IV, an analysis was performed to determine if the overall ratings for each of the functional categories was independent of the respondents' demographic characteristics. Although in each category for both DCAS and the Plant Cognizance activities at least one question showed that an association did exist, in none of these cases could the strength of this association be termed more than weak. While the overall ratings for each of the functional categories was in these few cases dependent upon a demographic characteristic, the strength of this association leads to the conclusion that the overall ratings were not influenced by the respondents' demographic characteristics. In other words, it is concluded that the personal characteristics of the questionnaire respondents, their activity, service, etc., did not bias their responses to the evaluation of the DCAS and Plant Cognizance performance.

Part 4.

In Part 4 of Chapter IV, an analysis was undertaken to determine if there was a statistically significant difference in the overall ratings given the four functional areas for the two types of CAS activities (DCAS and Plant Cognizance.) Chi-Square tests of homogeneity were run with two perspectives (Entire Sample and Limited Sample.) Based on the results, it is concluded that there is a significant difference in the overall ratings given DCAS and Plant Cog activities in the Engineering category. There is not a significant difference in the Production category. General Contract Administration and Quality Assurance demonstrated conflicting results.

RECOMMENDATIONS FOR FURTHER RESEARCH

While by no means inclusive, the following recommendations for further research and investigation are suggested.

(a) An examination of the relatively low overall ratings given the Engineering category with emphasis on the contribution of each individual question to the overall rating.

(b) Development of a standard by which the performance of the CAS components could be measured. At present, no guidelines exist as to whether a 70% favorable rating is acceptable as a level of performance satisfaction.

(c) An investigation of the differences between General Contract Administration and Engineering, the functional categories having the highest and lowest favorable ratings respectively. The investigation could include in-depth interviews with individuals within the various DOD activities, and the gathering of suggestions for improvement/modification of policy and procedure.

While the above areas for research do not by any measure exhaust the possibilities for further work, they do point out some areas that do exist. An extensive amount of data, gathered from the questionnaire effort exists as a base for further research.

APPENDIX A

ASPR 1-406

This appendix contains the list of contract administration functions taken from the 1975 Edition of the Armed Services Procurement Regulations, (ASPR 1-406.)

(i) review contractor's compensation structure;

(ii) review the contractor's insurance plans;

(iii) review and approve or disapprove contractor's requests for payments under the progress payments clause;

(iv) determine the allowability of costs suspended or disapproved on a DCAA Form 1 when a written appeal has been received from the contractor, direct the suspension or disapproval of any costs when there is reason to believe that they should be suspended or disapproved, and approve final vouchers;

(v) negotiate billing and final overhead rates when the contract contains the clause in 3-704, except when negotiation responsibility is placed elsewhere in accordance with Departmental procedures;

(vi) negotiate understandings consistent with agreements negotiated under 15-107 applicable to treatment of costs

under contracts currently assigned for administration;

(vii) negotiate prices and execute supplemental agreements for spare parts and other items selected through provisioning procedures;

(viii) review and evaluate contractor's proposals in accordance with 3-801.5(b) and furnish comments and recommendations to the procuring contracting officer when negotiation will be accomplished by the procuring contracting officer;

(ix) when authorized by the purchasing office, negotiate or negotiate and execute supplemental agreements incorporating contractor proposals resulting from change orders issued under the Changes clause (Prior to completion of negotiations and issuance of the supplemental agreement, any delivery schedule shall be coordinated with the purchasing office.);

(x) manage special bank accounts;

(xi) assure timely notification by the contractor of any anticipated overrun or underrun of the estimated cost under cost-type contracts;

(xii) review, approve or disapprove and maintain surveillance of the contractor's procurement system;

(xiii) consent to the placement of subcontracts;

(xiv) monitor contractor's financial condition and advise the procuring contracting officer when contract performance is jeopardized thereby;

(xv) when authorized by the purchasing office, negotiate

prices and execute priced exhibits for unpriced orders issued by the procuring contracting officer under basic ordering agreements;

(xvi) issue tax exemption certificates;

(xvii) conduct post-award orientation conferences;

(xviii) issue work requests under maintenance, overhaul and modification contracts;

(xix) negotiate and execute contractual documents for settlement of partial and complete contract terminations for convenience, except as otherwise prescribed by Section VIII;

(xx) perform necessary screening, redistribution and disposal of contractor inventory;

(xxi) perform property administration;

(xxii) prepare findings of fact and issue decisions under the Disputes clause on matters on which the contract administration office has the authority to take definitive action;

(xxiii) assure processing and execution of duty-free entry certificates;

(xxiv) in facilities contracts--

(A) evaluate contractor's requests for facilities and changes to existing facilities, and provide the procuring contracting officer with appropriate recommendations thereon;

(B) assure required screening of facility items before acquisition by contractor;

(C) approve use of facilities on a

noninterference basis in accordance with paragraph (b) of the clause in 7-702.12;

(D) assure payment of any rental due; and

(E) assure reporting of items no longer needed for defense production;

(xxv) perform production support, surveillance, and status reporting, including timely reporting of potential and actual slippages in contract schedules;

(xxvi) perform pre-award surveys;

(xxvii) perform industrial readiness and mobilization production planning field surveys and schedule negotiations;

(xxviii) monitor contractor industrial labor relations matters under the contract; apprise the procuring contracting officer and cognizant departmental labor relations advisor of actual or potential labor disputes; and coordinate the removal of urgently required material from the strikebound contractor's plants upon instructions from, and authorizations of, the procuring contracting officer and the cognizant departmental labor relations advisor;

(xxix) perform traffic management services including issuance and control of Government bills of lading and other transportation documentation;

(xxx) review the adequacy of the contractor's traffic operations;

(xxxi) review and evaluate preservation, packaging and packing;

(xxxii) provide surveillance of contractor design, development, and production engineering efforts;

(xxxiii) review engineering studies, design, and proposal, and make recommendations to the system/project manager or purchasing office;

(xxxiv) evaluate and monitor contractor engineering efforts and expenditures in accordance with contract terms;

(xxxv) conduct surveillance of contractor engineering practices with regard to subcontractors;

(xxxvi) review, on a continuing basis, contractor test plans and directives for compliance with contract terms; compare milestones; progress, and cost against contract requirements;

(xxxvii) assist in classification of waivers and deviations;

(xxxviii) evaluate the adequacy of contractor engineering data control systems, including assurance that systems provide for timely incorporation of changes in data being acquired;

(xxxix) monitor contractor value engineering programs;

(xl) review cost reduction proposals, and submit comments regarding effect of proposed changes on the engineering requirements of the contract;

(xli) evaluate and perform surveillance of contractor configuration management systems and procedures;

(xlii) perform surveillance of contractor engineering change systems; review Class I engineering change proposals, and comment on engineering feasibility and need; assist in price analysis of engineering changes; review Class II

engineering changes to insure proper classification;

(xliii) evaluate the contractor management, planning, scheduling, and allocation of engineering resources;

(xliv) evaluate and monitor contractor reliability and maintainability programs;

(xlv) review and evaluate for technical adequacy the logistic support, maintenance, and modification programs accomplished by the contractor;

(xlvi) make appropriate comments to purchasing offices on any inadequacies noted in specifications;

(xlvii) perform procurement quality assurance;

(xlviii) maintain surveillance of flight operations;

(xlix) assure contractor compliance with applicable safety requriements;

(l) assure contractor's compliance with small business, labor surplus area, and minority business enterprises mandatory subcontracting programs; conducting, on an as-required basis , small business and labor surplus area set-aside surveillance; and providing advice to small business, labor surplus area concerns, and minority business enterprises;

(li) in connection with classified contracts, administer those portions of the Industrial Security Program designated as ACO responsibilities in the ISR and ISM (See Appendix C, Industrial, Security Regulation, DoD 5220.22-R, for partial listing of primary responsibilities (also see 1-320).);

(lii) make payments on assigned contracts (but see 20-706);

(liii) assign and perform supporting administration;

(liv) assure timely submission of required reports;

(lv) will advise and assist defense contractors regarding their priorities and allocations responsibilities and assist defense purchasing activities in processing requests for special assistance and for priority ratings for privately-owned capital equipment;

(lvi) process and execute novation and change of name agreements in accordance with Section XXVI, Part 4;

(lvii) when authorized by the purchasing office, negotiate or negotiate and execute supplemental agreements accelerating or decelerating contract delivery schedules;

(lviii) when authorized by the purchasing office, negotiate or negotiate and execute supplemental agreements providing for the de-obligation of unexpended dollar balances considered excess to known contract requirements;

(lix) determine adequacy of prime contractor's Disclosure Statements;

(lx) determine whether prime contractor's Disclosure Statements are in compliance with Section XV and Cost Accounting Standards;

(lxi) determine contractor compliance with Cost Accounting Standards and Disclosure Statements, if applicable;

(lxii) negotiate price adjustments and execute supplemental agreements pursuant to the Cost Accounting Standards clause in 7-104.83;

(lxiii) perform post award surveillance of contractor progress toward demonstration of Cost/Schedule Control Systems to meet the Cost/Schedule Control Systems Criteria (see 7-104.87), provide assistance in the review and acceptance of contractors' Cost/Schedule Control Systems, and perform post-acceptance surveillance to insure continuing operation of contractors' accepted systems;

(lxiv) when authorized by the purchasing office, issue amended shipping instructions and, when necessary, negotiate and execute supplemental agreements incorporating contractor proposals resulting from the amended shipping instructions;

(lxv) when authorized by the purchasing office, issue change orders and negotiate and execute resultant supplemental agreements under contracts for ship construction, conversion and repair;

(lxvi) issue contract modifications requiring the contractor to provide packing, crating, and handling services on excess Government property. When the ACO determines it to be in the Government's best interests, he may secure such services from other than the contractor in possession of the property;

(lxvii) approve contractor acquisition/fabrication of special test equipment as provided in paragraph (b) of the clause in 7-104.26;

(lxviii) negotiate and execute contractual documents for settlement of cancellation charges under multi-year procurements; and

(lxix) evaluate and monitor contractor's procedures for complying with the "Restrictive Markings on Technical Data" clause in 7-104.9(p).

APPENDIX B

SAMPLE QUESTIONNAIRE

OFFICE OF THE ASSISTANT SECRETARY OF DEFENSE
WASHINGTON, D. C. 20301

LLATIONS AND LOGISTICS

9 January 1976

MEMORANDUM FOR The Contract Administration Study Participants

SUBJECT: Contract Administration Improvement Study

The Assistant Secretary of Defense (Installations and Logistics) has formally announced a major study of the Defense Contract Administration function in order that improved policies may be developed which optimize manpower resources to accomplish essential tasks. We have established four study teams to provide recommendations which will improve government utilization of resources, provide contract administration policy improvement, recognize Defense-Industry concerns and survey government buying activities to ascertain satisfaction with the variety of services currently provided.

You have been selected for participation in this study effort. The enclosed questionnaire has been devised by the Navy Post Graduate School, Monterey, California, to gather information relating to the government buying office/contract administration office interface. They will classify, analyze and prepare the results of the questionnaire into a major portion of the Contract Administration Improvement Study. An OSD/RCS number has been secured and your candid views are needed.

The questionnaire is in two parts. Part I, requests you to provide certain information about yourself and your experiences in the procurement process. Your name is not required and replies will be coded to ensure the confidential nature of your responses. Part II, lists the basic contract administration functions divided into the four general categories of general contract administration, production, quality assurance and engineering.

The data obtained during this survey will be used to determine overall DoD buying office's satisfaction with the services obtained in the user-customer relationship. Your complete support is requested.

JOHN H. KUNSEMILLER
Director, Contract
Administration & Support

Enclosure 1
Questionnaire

2. Type of Activity
- Systems Command
- Buying Activity
- Requiring Activity/Program Office/Project Office
- Other, specify _____
- Stock Point/Depot/Center
- Inventory Control Point

3. Service of Activity
- Army
- Air Force
- Other, specify _____
- Navy
- DSA

4. Current Job Title _____

Indicate the most appropriate description of your present job.
- PCO
- Buyer
- Engineer
- Technician
- Procurement Analyst/Contract Specialist
- Other, specify _____
- Negotiator/Cost Analyst
- Logistics/Provisioning Specialist
- Industrial/Production Specialist
- Quality Assurance Specialist

5. Rank/GS Rating
- 0-2 or less/GS10 or less
- 0-3, 0-4/GS11-12
- Other, specify _____
- 0-5/GS13-14
- 0-6/GS15

6. Status — Indicate military service or civil service
- Army
- Navy
- Air Force
- Civil Service

7. Age
- 20-30
- 31-40
- 41-50
- 51-60
- Over 60

8. Supervisor status
- Supervisor
- Not a supervisor

9. If a supervisor, the number of employees supervised:
- 1 to 5 employees
- 6 to 10 employees
- 11 to 20 employees
- over 20 employees

10. Education level
- High School
- Some College
- Some graduate school
- Graduate degrees

11. Total procurement experience
- Less than 1 year
- 1 to 3 years
- 3 to 5 years
- 5 to 10 years
- 10 to 20 years
- Over 20 years

12. Total procurement related experience
- Less than 1 year
- 1 to 5 years
- 5 to 10 years
- 10 to 20 years
- Over 20 years

13. Category which best describes current product specialty
- Electronic
- Aircraft/Missiles
- Shipboard
- Automotive
- Services (Engineering, R&D, software, etc.)
- Other, specify _____
- Mechanical
- Electrical
- Fuel
- Construction material

The following questions ask for information concerning your annual involvement in procurement. Indicate the one best answer for each question.

14. Type of procurement most often encountered
- Formally advertised
- Negotiated

15. Contract type most often encountered
- CPFF (cost plus fixed fee)
- CPIF (cost plus incentive fee)
- CPAF (cost plus award fee)
- FPI (fixed-price incentive)
- FP (fixed-price)
- Other, specify _____

16. Number of contracts for the year
- Less than 5
- 5 to 10
- 11 to 20
- 21 to 50
- Over 50

17. Average dollar value per contract
- $100,000 and less
- $100,000 to $500,000
- $500,000 to $1 million
- $1-5 million
- Over $5 million

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18. Defense Contract Administration Services (DCAS Regions, Districts, Area Offices, Plant Offices)
- Yes
- No

A. If yes, percent is
- 0-25%
- 26-50%
- 51-75%
- 76-100%
- Unknown

19. Army Plant Activities
- Yes
- No

A. If yes, percent is
- 0-25%
- 26-50%
- 51-75%
- 76-100%
- Unknown

20. Navy plant cognizance offices (Navy Plant Representative Office - NAVPRO)
- Yes
- No

A. If yes, percent is
- 0-25%
- 26-50%
- 51-75%
- 76-100%
- Unknown

21. Air Force plant cognizance offices (Air Force Plant Representative Office - AFPRO)
- Yes
- No

A. If yes, percent is
- 0-25%
- 26-50%
- 51-75%
- 76-100%
- Unknown

22. Buying office/requiring activity
- Yes
- No

A. If yes, percent is
- 0-25%
- 26-50%
- 51-75%
- Unknown
- 76-100%

23. Other organizations

QUESTIONNAIRE DIRECTIONS

In questions (18-23), on the previous page, you indicated your experience in dealing with the various contract administration organizations. Your satisfaction with the CAS functions listed on subsequent pages should be made in consideration of your answers to those questions.

The following portion of the questionnaire consists of four major categories of functions/questions. For each category, you should first quickly read the functions/questions in that category and determine whether you are sufficiently experienced in that functional area to respond meaningfully. If you do not feel qualified to evaluate the functions in that category, please indicate this by marking the block next to the statement, "I do not have sufficient experience in this category to evaluate the following functions", and then go on to the next category of questions.

If you feel sufficiently experienced to evaluate the functions in that category, the following directions apply. Each function has three response areas to be answered. The first two areas address your satisfaction with the performance of the Defense Contract Administration Services (DCAS) and the plant Cognizance contract administration organizations (Army Plant Activity, NAVPRO, AFPRO). The third area asks for your opinion if that function could be performed better by the buying office/requiring activity.

In each of these response areas, you are asked to indicate your evaluation of the DCAS and Plant Cognizance performance of the function by marking the block that best describes your evaluation. In the response areas, space is available for a "No Comment" answer. If you do not have sufficient experience to evaluate the performance of the organization for that function, or have too few observations of their performance in that area, please indicate this by marking the block under "No Comment".

Finally, space has been provided after each category of functions for your written comments. While the purpose of the questionnaire is to measure your satisfaction with the organizations that perform contract administration, your suggestions for improvements and comments of a general or specific nature are strongly encouraged. If your comments are directed toward a particular function, please reference the function number in your comments. Additionally, the reverse side of the page may be used for comments. This is your opportunity to indicate your satisfaction with the caliber of services provided by the contract administration services.

After completion of the questionnaire, place it in the envelope provided. Do not staple or fold the questionnaire.

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USE SOFT LEADED PENCIL

How do you rate the performance of Defense Contract Administration Services (DCAS)	How do you rate the performance of the Service Plant Cognizance Organizations (Army Plant Activity NAVPRO, AFPRO)	Could the function be performed better by the Buying Office Requiring Activity
Excellent / Satisfactory / Needs Improvement / Unsatisfactory / No Comment	Excellent / Satisfactory / Needs Improvement / Unsatisfactory / No Comment	Yes / No / No Comment

1

tract Administration

have sufficient experience in this category to evaluate the functions.

contractor systems (Procurement, Compensation, Insurance, ng, Property Administration).			
s post-award conference meetings.			
es overhead rates (Forward Pricing, Billing, Final Overhead).			
ers progress payments.			
es spares and provisioning items.			
es orders under Basic Ordering Agreements.			
s contractors' proposals.			
es change order proposals.			
ers contractors' subcontracting activities.			
s the contractors' financial conditions.			
ers facilities contracts.			
coordination and information on matters relating to Cost ng Standards.			
s and reports on anticipated overruns or underruns on cost-tracts.			
s payment functions on assigned contracts.			
s pre-award surveys.			
s surveillance of Contractor Industrial Security Programs.			
s advice to the buying office on all pertinent matters relating to administration functions.			NA
ponsiveness of the general contract administration component sts for information and/or assistance is considered.			NA
rking relationship of the general contract administration com- with the contractor(s) is considered.			NA
nning (number of personnel and grade level) of personnel in the contract administration component is considered.			NA
hnical expertise of personnel in the general contract adminis- component is considered.			NA
I would rate the performance of the general contract admin- n component as:			NA

reverse side if necessary)

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e Only

USE SOFT LEADED PENCIL

How do you rate the performance of Defense Contract Administration Services (DCAS)					How do you rate the performance of the Service Plant Cognizance Organizations (Army Plant Activity NAVPRO, AFPRO)					Could the function be performed better by the Buying Office Requiring Activity		
Excellent	Satisfactory	Needs Improvement	Unsatisfactory	No Comment	Excellent	Satisfactory	Needs Improvement	Unsatisfactory	No Comment	Yes	No	No Comment

e Only

USE SOFT LEADED PENCIL

	How do you rate the performance of Defense Contract Administration Services (DCAS)					How do you rate the performance of the Service Plant Cognizance Organizations (Army Plant Activity NAVPRO, AFPRO)					Could the function be performed better by the Buying Office Requiring Activity		
	Excellent	Satisfactory	Needs Improvement	Unsatisfactory	No Comment	Excellent	Satisfactory	Needs Improvement	Unsatisfactory	No Comment	Yes	No	No Comment
3													
rance Functions													
have sufficient experience in this category to evaluate the functions.													
contractor quality inspection and testing to ensure compliance tractual requirements.													
contractor quality system to ensure compliance with con- requirements.													
s contractor quality system planning and procedure..													
s contractor performance on corrective action and disposition nforming supplies.													
s contractor quality system with regard to materials, special s, metrology and sampling.													
s contractor quality assurance system in pre-award surveys.													
s acceptance of non-conforming material.													
s technical evaluation of contractor requests for waivers and s.													
s technical analysis of contractor cost proposals.													
s buying office directed inspections.													
tes and evaluates customer complaints.													
advice to the buying office on all pertinent matters relating assurance functions.													NA
onsiveness of the quality assurance component to requests for ion and/or assistance is considered.													NA
king relationships of the quality assurance component with the or is considered.													NA
nning (number of personnel and grade level) in the quality e component is considered.													NA
nical expertise of personnel in the quality assurance compo- onsidered.													NA
I would rate the performance of the quality assurance compo-													NA

reverse side if necessary)

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Only

USE SOFT LEADED PENCIL

	How do you rate the performance of Defense Contract Administration Services (DCAS)	How do you rate the performance of the Service Plant Cognizance Organizations (Army Plant Activity NAVPRO, AFPRO)	Could the function be performed better by the Buying Office Requiring Activity
4			
have sufficient experience in this category to evaluate the functions.	Excellent Satisfactory Needs Improvement Unsatisfactory No Comment	Excellent Satisfactory Needs Improvement Unsatisfactory No Comment	Yes No No Comment
s contractor engineering studies, designs and proposals.			
s contractor engineering efforts with regard to expenditures.			
surveillance of contractor engineering practices with regard to actors.			
s contractor test plans and directives.			
s technical evaluations of contractors' requests for waivers and s.			
s contractors' engineering data control systems.			
s contractor recommended design changes.			
surveillance of contractor configuration management systems edures.			
s contractor management of engineering resources.			
s contractor reliability and maintainability programs.			
and evaluates the contractors' logistic support, maintenance ification programs.			
advice to the buying office on all pertinent matters relating to engineering functions.			NA
onsiveness of the Engineering component to requests for in- n and/or assistance is considered.			NA
king relationship of the Engineering component with the con- s considered.			NA
ning (number of personnel and grade level) of personnel in neering component is considered.			NA
nical expertise of personnel in the Engineering component is ed.			NA
I would rate the performance of the Engineering compo-			NA

reverse side if necessary)

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APPENDIX C

ADDITIONAL RESPONDENT CHARACTERISTICS

TABLE C - 1

Present Assignment Experience Level

Category	Respondents	Percentage
Less than 1 YR	84	9%
1 - 3 YRs	253	27%
3 - 5 YRs	116	13%
5 - 10 YRs	208	23%
Over 10 YRs	257	28%
	918	100%

TABLE C - 2

Procurement Related Experience Level

Category	Respondents	Percentage
Less than 1 YR	39	4%
1 -5 YRs	182	20%
5 - 10 YRs	168	18%
10 - 20 YRs	346	38%
Over 20 YRs	183	20%
	918	100%

TABLE C - 3

Respondent Product Specialty

Category	Respondents	Percentage
Aircraft, Missiles	422	46%
Electronic	225	25%
Services	68	7%
Shipboard	52	6%
Mechanical	32	3%
Automotive	15	2%
Construction	10	1%
Electrical	6	1%
Fuel	1	---
Other	87	9%
	918	100%

TABLE C - 4

Contract Type Most Often Encountered

Category	Respondents	Percentage
FP	483	53%
FPI	150	16%
CPFF	129	14%
CPIF	123	13%
CPAF	10	1%
Other	23	3%
	918	100%

APPENDIX D

TABLES D - 1 TO D - 8

Key tc Independent Variable Abbreviations

First and Second Alpha Characters: Functional Category

ca = General Contract Administration

pd = Production

qa = Quality Assurance

en = Engineering

Numeric Characters: Refers to the number of the question on questionnaire in the applicable functional category

Last Alpha Character: a = DCAS
b = Plant Cognizance Activities

TABLE D - 1

GENERAL CONTRACT ADMINISTRATION - DCAS

Indep Var	Chi - Square	Signif	Phi	Cont Coeff	Lambda
ca2a	123.25688	.0	.51326	.45663	.33871
ca3a	57.95462	.0001	.38623	.36029	.17949
ca4a	60.79205	.0001	.37923	.35459	.14407
ca5a	36.26468	.0001	.29768	.28531	.11504
ca6a	51.28690	.0001	.40400	.37459	.14737
ca7a	25.01129	.0001	.30741	.29384	.03947
ca8a	124.56805	.0	.52075	.46188	.13953
ca9a	58.37848	.0001	.41521	.38347	.19626
ca10a	74.76306	.0001	.43044	.39537	.19492
ca11a	40.61003	.0001	.30737	.29380	.02500
ca12a	43.15308	.0001	.36904	.34622	.14634
ca13a	54.75598	.0001	.37824	.35378	.09901
ca14a	46.59720	.0001	.36551	.34330	.0
ca15a	22.19705	.0001	.22711	.22147	.06349
ca16a	91.73006	.0	.43387	.39802	.20714
ca17a	20.52252	.0001	.25026	.24278	.07778
ca18a	110.08496	.0	.46267	.41991	.07534
ca19a	133.42537	.0	.49457	.44332	.19205
ca20a	136.15154	.0	.51147	.45536	.32877
ca21a	14.72088	.0001	.20315	.19909	.0
ca22a	141.64117	.0	.52587	.46544	.22378

TABLE D - 2

GENERAL CONTRACT ADMINISTRATION - PLANT COG

Indep Var	Chi - Square	Signif	Phi	Cont Coeff	Lambda
ca2b	107.53133	.0	.54684	.47979	.34722
ca3b	42.78000	.0001	.40688	.37687	.09434
ca4b	99.14893	.0	.52765	.46667	.24658
ca5b	2.55694	.1098	.10411	.10355	.0
ca6b	37.99406	.0001	.38238	.35716	.0
ca7b	45.84813	.0001	.45204	.41191	.09302
ca8b	119.79352	.0	.56679	.49310	.07595
ca9b	52.38889	.0001	.44183	.40414	.0
ca10b	40.68512	.0001	.35955	.33834	.0
ca11b	38.23488	.0001	.34336	.32475	.0
ca12b	27.47548	.0001	.32106	.30569	.0
ca13b	56.03632	.0001	.42670	.39247	.0
ca14b	45.29175	.0001	.38757	.36137	.0
ca15b	14.36896	.0002	.23600	.22969	.03509
ca16b	54.94803	.0001	.42937	.39454	.06780
ca17b	.10039	.7514	.04210	.04206	.0
ca18b	98.48888	.0	.49237	.44173	.0
ca19b	95.91826	.0	.47268	.42735	.05495
ca20b	89.23213	.0	.46591	.42232	.22093
ca21b	25.24399	.0001	.28704	.27590	.0
ca22b	94.03899	.0	.48229	.43440	.10465

TABLE D - 3

PRODUCTION - DCAS

Indep Var	Chi - Square	Signif	Phi	Cont Coeff	Lambda
pd2a	57.57549	.0001	.49419	.44304	.34146
pd3a	78.35768	.0001	.44374	.40560	.29412
pd4a	112.32751	.0	.54181	.47638	.40601
pd5a	87.20305	.0	.45271	.41244	.20979
pd6a	107.68127	.0	.54831	.48078	.33333
pd7a	27.64354	.0001	.27547	.26558	.12195
pd8a	81.55818	.0	.61179	.52187	.43836
pd9a	75.90108	.0001	.53956	.47485	.38202
pd10a	64.21870	.0001	.44870	.40938	.26605
pd11a	41.33670	.0001	.52375	.46396	.40000
pd12a	47.97316	.0001	.44456	.40623	.25610
pd13a	24.64714	.0001	.33482	.31750	.18182
pd14a	156.18250	.0	.62470	.52981	.43796
pd15a	141.62407	.0	.58758	.50660	.42748
pd16a	92.87177	.0	.49593	.44429	.34167
pd17a	37.00287	.0001	.37400	.35030	.08889
pd18a	138.54114	.0	.59650	.51229	.44882

TABLE D - 4

PRODUCTION - PLANT COG

Indep Var	Chi - Square	Signif	Phi	Cont Coeff	Lambda
pd2b	27.14941	.0001	.36113	.33966	.03448
pd3b	43.63321	.0001	.39539	.36769	.17333
pd4b	72.79280	.0001	.50202	.44866	.29268
pd5b	83.73154	.0	.50233	.44888	.15217
pd6b	80.95067	.0	.51588	.45847	.17442
pd7b	26.50732	.0001	.30191	.28903	.12346
pd8b	30.79951	.0001	.39170	.36472	.03571
pd9b	33.38100	.0001	.37093	.34778	.07246
pd10b	42.88136	.0001	.43501	.39890	.20635
pd11b	16.75902	.0001	.36269	.34096	.15385
pd12b	43.50279	.0001	.45191	.41181	.16949
pd13b	26.35760	.0001	.37081	.34768	.19298
pd14b	126.98576	.0	.62166	.52796	.40000
pd15b	120.68857	.0	.60244	.51603	.43617
pd16b	78.04280	.0001	.51520	.45799	.34568
pd17b	70.83472	.0001	.55438	.48486	.21311
pd18b	127.44360	.0	.64398	.54143	.48864

TABLE D - 5

QUALITY ASSURANCE - DCAS

Indep Var	Chi - Square	Signif	Phi	Cont Coeff	Lambda
qa2a	165.80324	.0	.62235	.52838	.51592
qa3a	167.11548	.0	.62701	.53122	.52866
qa4a	147.69235	.0	.62286	.52869	.52857
qa5a	153.16039	.0	.62511	.53007	.52778
qa6a	155.60710	.0	.66195	.55197	.57895
qa7a	118.84140	.0	.55804	.48730	.45000
qa8a	100.63254	.0	.59449	.51101	.50450
qa9a	97.15544	.0	.51871	.46045	.33099
qa10a	88.03221	.0	.54691	.47984	.30392
qa11a	118.83189	.0	.55408	.48466	.43885
qa12a	107.59776	.0	.56048	.48892	.46324
qa13a	129.45001	.0	.57059	.49559	.43151
qa14a	142.48566	.0	.58788	.50680	.48684
qa15a	117.94812	.0	.55979	.48846	.44361
qa16a	69.09839	.0001	.50332	.44958	.34615
qa17a	152.30864	.0	.62732	.53141	.52482

TABLE D - 6

QUALITY ASSURANCE - PLANT COG

Indep Var	Chi - Square	Signif	Phi	Cont Coeff	Lambda
qa2b	111.53534	.0	.62738	.53145	.47674
qa3b	119.18547	.0	.65647	.54878	.52941
qa4b	105.15413	.0	.64214	.54033	.51899
qa5b	71.04631	.0001	.52747	.46655	.36709
qa6b	85.31770	.0	.60147	.51542	.46667
qa7b	74.80908	.0001	.57352	.49751	.42647
qa8b	51.47299	.0001	.51326	.45663	.35938
qa9b	59.83699	.0001	.49418	.44304	.27500
qa10b	46.75279	.0001	.47134	.42636	.12903
qa11b	70.13521	.0001	.52868	.46738	.37333
qa12b	57.40215	.0001	.49111	.44082	.29167
qa13b	92.43924	.0	.58919	.50763	.39024
qa14b	115.94626	.0	.64809	.54386	.52381
qa15b	73.68713	.0001	.53487	.47164	.37333
qa16b	49.28679	.0001	.51157	.45544	.26667
qa17b	95.87030	.0	.60640	.51851	.44737

TABLE D - 7

ENGINEERING - DCAS

Indep Var	Chi - Square	Signif	Phi	Cont Coeff	Lambda
en2a	131.60291	.0	.71100	.57946	.68333
en3a	86.44595	.0	.59859	.51361	.55046
en4a	74.11324	.0001	.56408	.49130	.51376
en5a	105.55109	.0	.65382	.54724	.64228
en6a	117.85619	.0	.64896	.54437	.62687
en7a	48.81133	.0001	.49681	.44493	.46535
en8a	140.61043	.0	.73755	.59357	.71545
en9a	89.66776	.0	.61332	.52282	.57627
en10a	61.69493	.0001	.55839	.48754	.52577
en11a	116.08440	.0	.69509	.57075	.67521
en12a	70.98128	.0001	.60125	.51528	.53933
en13a	166.17993	.0	.77340	.61178	.76119
en14a	75.41344	.0001	.51257	.45614	.44928
en15a	63.71004	.0001	.49471	.44342	.43939
en16a	79.54813	.0001	.61470	.52367	.58416
en17a	152.52061	.0	.73727	.59342	.71852

TABLE D - 8

ENGINEERING - PLANT COG

Indep Var	Chi - Square	Signif	Phi	Cont Coeff	Lambda
en2b	85.55251	.0	.61599	.52447	.56863
en3b	66.16103	.0001	.55885	.48784	.51020
en4b	42.02200	.0001	.45809	.41647	.41053
en5b	77.12706	.0001	.60852	.51984	.55435
en6b	98.43155	.0	.66030	.55102	.62136
en7b	33.00995	.0001	.45069	.41088	.36620
en8b	101.03078	.0	.67155	.55750	.61000
en9b	65.41685	.0001	.55392	.48455	.47778
en10b	44.52773	.0001	.49914	.44660	.41558
en11b	66.57123	.0001	.55808	.48733	.47826
en12b	69.93684	.0001	.59845	.51352	.54545
en13b	102.36224	.0	.66443	.55341	.61765
en14b	60.68991	.0001	.50165	.44839	.43119
en15b	55.22447	.0001	.49757	.44547	.42574
en16b	44.55423	.0001	.49353	.44257	.44186
en17b	110.58925	.0	.69176	.56891	.65714

APPENDIX E

DEMOGRAPHIC REGROUPING

2. Type of Activity
   - Systems command
   - Buying Activity
   - Requiring Activity/Program Office/Project Office
   - Depot/ICP/Center (includes: Stock Point, Depot, Center, and Others)

3. Service of Activity
   - DSA
   - Service (includes: Army, Navy, Air Force)

4. Current Job Title
   - Procurement (includes: PCO, Buyer, Procurement Analyst/Contract Specialist, Negotiator/Cost Analyst
   - Logistics Technician (includes: Technician, Logistics /Provisioning Specialist)
   - Quality Assurance Specialist
   - Engineer
   - Industrial/Production Specialist
   - Other

5. Rank/GS Rating
   - O-4/GS-12 or less (includes: O-2 or less/GS-10 or less, O-3, O-4/GS-11,12)

O-5/GS-13,14
O-6/GS-15

6. Status
Military (includes: Army, Navy, Air Force)
Civil Service

7. Age
Under 40 (includes: 20 - 30, 30 - 40)
Over 40 (includes: 41 - 50, 51 - 60, Over 60)

8. Supervisor Status
No Change

9. If a Supervisor, The Number of Employees Supervised
No Change

10. Education Level
High School (includes: High School, Some College)
College (includes: College Graduate, Some Graduate School)
Graduate Degrees

11. Experience Level in Present Assignment
5 years or less (includes: Less than 1 year, 1 to 3 years, 3 to 5 years)
5 to 10 years
Over 10 years

12. Total Procurement Related Experience
10 years or less (includes: Less than 1 year, 1 to 5 years, 5 to 10 years)

10 to 20 years
Over 20 years

13. Category Which Best Describes Current Product Specialty
Electronic
Aircraft/Missiles
Shipboard
Services
Other (includes: Automotive, Mechanical, Electrical, Fuel, Construction Material)

14. Type of Procurement Most Often Encountered
No Change

15. Contract Type Most Often Encountered
Cost (includes: CPFF, CPIF, CPAF)
Fixed Price (includes: FPI, FP)
Other

16. Number of Contracts For the Year
10 or less (includes: Less than 5, 5 to 10)
11 to 20
21 to 50
Over 50

17. Average Dollar Value Per Contract
$100,000 and less
$100,000 to $1 million (includes $100,000 to $500,000, $500,000 to $1 million)
$1 to 5 million
Over $5 million

APPENDIX F

TABLES F - 1 TO F - 8

Key To Table Abbreviations

TYPEACT:	Type Of Activity
SERVACT:	Service Of Activity
JOBTITLE:	Current Job Title
RATING:	Rank/GS Rating
STATUS:	Status (Military or Civilian)
AGE:	Age
SUPVSTAT:	Supervisor Status
NOSUPV:	If A Supervisor, The Number Of Employees Supervised
EDUCLEV	Education Level
EXPERPA:	Experience Level In Present Assignment
TOTPROCEX:	Total Procurement Related Experience
PRODSPEC:	Category Which Best Describes Current Product Specialty
TYPEPROC:	Type Of Procurement Most Often Encountered
CONTTYPE:	Contract Type Most Often Encountered
NOCONT:	Number Of Contracts For The Year
AVDOLVAL:	Average Dollar Value Per Contract

TABLE F - 1

Overall General Contract Administration - DCAS

Indep Var	Chi - Square	Signif	Cramer's V / Phi	Cont Coeff	Lambda
TYPEACT	4.14865	.2459	.08414	.08384	.0
SERVACT	5.81596	.0159	.10566	.10507	.0
JOBTITLE	17.99606	.0030	.17524	.17261	.01852
RATING	4.04246	.1325	.08306	.08277	.0
STATUS	1.02341	.3117	.04760	.04755	.0
AGE	.14152	.7068	.01956	.01956	.0
SUPVSTAT	4.72956	.0296	.09407	.09366	.0
NOSUPV	7.92042	.0945	.11626	.11548	.0
EDUCLEV	.64507	.7243	.03318	.03316	.0
EXPERPA	3.14804	.2072	.07329	.07310	.0
TOTPROEX	.26002	.8781	.02106	.02106	.0
PRODSPEC	15.49196	.0038	.16259	.16049	.0
TYPEPRCC	3.61801	.0572	.08410	.08381	.0
CONTTYPE	.19278	.9081	.01814	.01813	.0
NOCONT	.98966	.8038	.04110	.04106	.0
AVDOLVAL	3.10920	.3751	.07284	.07265	.0

TABLE F - 2

Overall

General Contract Administration - Plant Cog

Indep Var	Chi - Square	Signif	Cramer's V / Phi	Cont Coeff	Lambda
TYPEACT	2.96275	.3974	.07974	.07948	.0
SERVACT	2.15623	.1420	.08139	.08112	.0
JOBTITLE	12.60208	.0274	.16445	.16227	.0
RATING	.0034	.9529	.01041	.01041	.0
STATUS	1.44834	.2288	.06144	.06132	.0
AGE	.13739	.7109	.02284	.02283	.0
SUPVSTAT	2.11754	.7142	.06741	.06726	.0
NOSUPV	1.48694	.4755	.05649	.05640	.0
EDUCLEV	.34608	.8411	.02725	.02724	.0
EXPERPA	2.17598	.3369	.06833	.06817	.0
TOTPROEX	5.08593	.2786	.10447	.10390	.0
PRODSPEC	.04691	.8285	.01916	.01916	.0
TYPEPROC	.82431	.6622	.04206	.04202	.0
CONTTYPE	5.27970	.1524	.10644	.10584	.0
NOCONT	3.32943	.3436	.08453	.08423	.0
AVDOLVAL	1.77211	.6210	.06968	.06951	.0

TABLE F - 3

Overall Production - DCAS

Indep Var	Chi - Square	Signif	Cramer's V / Phi	Cont Coeff	Lambda
TYPEACT	3.66947	.2994	.09000	.08964	.0
SERVACT	3.73049	.0534	.09841	.09793	.0
JOBTITLE	19.44717	.0016	.20719	.20289	.02721
RATING	1.32508	.5155	.05408	.05401	.0
STATUS	.84995	.3566	.05059	.05053	.0
AGE	.23065	.6310	.02763	.02762	.0
SUPVSTAT	1.73738	.1875	.06703	.06688	.0
NOSUPV	8.32831	.0803	.13559	.13436	.0
EDUCLEV	2.48708	.2884	.07410	.07389	.0
EXPERPA	5.27951	.0714	.10796	.10733	.0
ICTPROCEX	.69210	.7075	.03909	.03906	.0
PRODSPEC	8.44800	.0765	.13656	.13531	.0
TYPEPROC	1.51585	.2182	.06433	.06420	.0
CONTTYPE	.14794	.9287	.01807	.01807	.0
NOCONT	.74072	.8636	.04044	.04040	.0
AVDOLVAL	2.55314	.4658	.07507	.07486	.0

TABLE F - 4

Overall Production - Plant Cog

Indep Var	Chi - Square	Signif	Cramer's V / Phi	Cont Coeff	Lambda
TYPEACT	1.77211	.6210	.06968	.06951	.0
SERVACT	.01953	.8889	.02454	.02453	.0
JOBTITLE	9.40357	.0940	.16051	.15848	.0
RATING	.42291	.8094	.03404	.03402	.0
STATUS	.02559	.8729	.01723	.01723	.0
AGE	.12153	.7274	.02494	.02493	.0
SUPVSTAT	.10643	.7442	.02347	.02346	.0
NOSUPV	14.90907	.0049	.20211	.19810	.0
EDUCLEV	1.25017	.5352	.05852	.05842	.0
EXPERPA	4.12208	.1273	.10627	.10568	.0
TOTPROCEX	.04682	.9769	.01133	.01133	.0
PRODSPEC	1.13813	.8882	.05584	.05575	.0
TYPEPRCC	.70999	.3994	.05383	.05375	.0
CONTTYPE	.03642	.9820	.00999	.00999	.0
NOCONT	1.76097	.6235	.06946	.06929	.0
AVDOLVAL	4.66485	.1981	.11305	.11233	.0

TABLE F - 5

Overall Quality Assurance - DCAS

Indep Var	Chi - Square	Signif	Cramer's V / Phi	Cont Coeff	Lambda
TYPEACT	3.43627	.3291	.08787	.08754	.0
SERVACT	3.77120	.0521	.09807	.09760	.0
JOBTITLE	34.73436	.0001	.27938	.26908	.09375
RATING	2.21532	.3303	.07056	.07038	.0
STATUS	.96211	.3267	.05385	.05377	.0
AGE	.49588	.4813	.03853	.03850	.0
SUPVSTAT	6.12902	.0133	.12236	.12146	.0
NOSUPV	11.08227	.0257	.15781	.15588	.00625
EDUCLEV	.89797	.6383	.04492	.04488	.0
EXPERPA	4.92338	.0853	.10518	.10461	.0
TOTPROEX	.71248	.7003	.04001	.03998	.0
PRODSPEC	17.77821	.0014	.19998	.19600	.05000
TYPEPROC	1.03324	.3094	.05384	.05376	.0
CONTTYPE	.75362	.6860	.04115	.04112	.0
NCCONT	3.03525	.3862	.08259	.08231	.0
AVDOLVAL	1.12805	.7703	.05035	.05028	.0

TABLE F - 6

Overall Quality Assurance - Plant Cog

Indep Var	Chi - Square	Signif	Cramer's V / Phi	Cont Coeff	Lambda
TYPEACT	.70775	.8714	.04898	.04892	.0
SERVACT	.01223	.9119	.02932	.02931	.0
JOBTITLE	14.44621	.0130	.22129	.21607	.01149
RATING	1.00220	.6059	.05829	.05819	.0
STATUS	1.04015	.3078	.06991	.06974	.0
AGE	.00816	.9280	.01356	.01355	.0
SUPVSTAT	1.38271	.2396	.07612	.07590	.0
NOSUPV	3.21137	.5231	.10434	.10377	.0
EDUCLEV	.62835	.7304	.04615	.04610	.0
EXPERPA	.90881	.0348	.05550	.05542	.0
TCTPROEX	.29789	.8616	.03178	.03176	.0
PRODSPEC	3.16848	.5300	.10364	.10308	.0
TYPEPRCC	.09673	.7558	.02990	.02989	.0
CONTTYPE	1.60620	.4479	.07379	.07359	.0
NOCONT	3.35334	.3403	.10662	.10602	.0
AVDOLVAL	3.29408	.3485	.10567	.10509	.0

TABLE F - 7

Overall Engineering - DCAS

Indep Var	Chi - Square	Signif	Cramer's V / Phi	Cont Coeff	Lambda
TYPEACT	16.72246	.0008	.22649	.22089	.07190
SERVACT	.24423	.6212	.03718	.03715	.0
JOBTITLE	9.84721	.0797	.17380	.17123	.09804
RATING	4.49867	.1055	.11747	.11667	.05882
STATUS	.01095	.9167	.01488	.01488	.0
AGE	.09183	.7619	.02333	.02333	.0
SUPVSTAT	4.29615	.0382	.12122	.12034	.03922
NOSUPV	4.77005	.3117	.12096	.12009	.03268
EDUCLEV	3.99292	.1358	.11067	.11000	.06536
EXPERPA	1.05737	.5894	.05695	.05686	.01961
TOTPROEX	5.89435	.0525	.13446	.13327	.05882
PRODSPEC	5.29457	.7584	.12744	.12642	.05229
TYPEPROC	.00540	.9414	.01216	.01216	.0
CONTTYPE	.96919	.6160	.05452	.05444	.0
NOCONT	4.61721	.2021	.11901	.11818	.05882
AVDOLVAL	4.82230	.1853	.12162	.12073	.07190

TABLE F - 8

Overall Engineering - Plant Cog

Indep Var	Chi - Square	Signif	Cramer's V / Phi	Cont Coeff	Lambda
TYPEACT	9.36110	.0249	.18830	.18505	.06838
SERVACT	.42340	.5152	.06802	.06786	.0
JOBTITLE	7.70872	.1730	.17088	.16844	.09402
RATING	2.77144	.2501	.10246	.10193	.0
STATUS	.00568	.9399	.00611	.00610	.0
AGE	.00181	.9660	.00562	.00562	.0
SUPVSTAT	.04686	.8286	.02114	.02113	.0
NOSUPV	3.62471	.4592	.11717	.11638	.03419
EDUCLEV	1.63046	.4425	.07859	.07835	.0
EXPERPA	.67125	.7149	.05042	.05036	.0
TOTPROEX	3.07540	.2149	.10793	.10731	.0
PRODSPEC	3.76472	.4388	.11942	.11857	.0
TYPEPRCC	.70780	.4002	.06416	.06403	.01709
CONTTYPE	3.88375	.1434	.12129	.12041	.03419
NOCONT	4.22383	.2383	.12649	.12549	.0
AVDOLVAL	9.73825	.0209	.19206	.18861	.01709

APPENDIX G

TOTAL SURVEY FREQUENCIES

Appendix G is separately bound.

APPENDIX H

SURVEY FREQUENCIES (FAVORABLE/UNFAVORABLE)

Appendix H is separately bound.

LIST OF REFERENCES

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